PROPERTY OF THE PATHOLOGY DEPARTMENT

The New England JOURNAL of MEDICINE

FORMERLY THE BOSTON MEDICAL AND SURGICAL JOURNAL

Official Organ of The Massachusetts Medical Society
The New Hampshire Medical Society — The Vermont State Medical Society
The New England Surgical Society — The Boston Surgical Society, Inc.
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OWNED AND PUBLISHED BY THE MASSACHUSETTS MEDICAL SOCIETY

Volume 203 Number 18 | Domestic $6 per Annum, 25c per Copy Canada $7.04, Foreign $7.56 | OCTOBER 30, 1930 | Published Weekly in Boston at 165 Newbury Street

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The Massachusetts Medical Society

The next annual meeting of the Massachusetts Medical Society will be held in Boston, Monday, Tuesday and Wednesday, June 8, 9 and 10, 1931.

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The New England
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VOLUME 203 OCTOBER 30, 1930 NUMBER 18

The Massachusetts Medical Society

SECTION OF TUBERCULOSIS

TUESDAY AFTERNOON, June 17, 1930

THE Section of Tuberculosis of the Massachusetts Medical Society convened in the Memorial Building, Plymouth, at two-thirty o'clock, Dr. Walter A. Griffin, Chairman of the Section, presiding.

The General Subject was "Early Diagnosis of Pulmonary Tuberculosis."

The first paper, entitled "Early Clinical Signs and Symptoms," was presented by Dr. Cleaveland Floyd, of Boston.

EARLY CLINICAL SYMPTOMS AND PHYSICAL SIGNS IN PULMONARY TUBERCULOSIS*

BY CLEVELAND FLOYD, M.D.†

CLINICAL symptoms and physical signs occurring in pulmonary tuberculosis, when spoken of as early, are so designated because they are supposed to appear in the primary stages of the disease. With any infection however, such as phthisis, where its course and manifestations are so irregular and varied, significant symptoms of early changes may be more apparent in one case than in another. Grouping, therefore, of either signs or symptoms, will not always denote the incipient case. In certain diseases a diagnosis may be made by routine examination. In pulmonary tuberculosis the careful history of the case is almost invariably of greater value and more nearly accurate than the physical signs. Perhaps the ability to detect every slight change from the normal in the chest is not the most important acquisition of the examiner. It is, rather, skill in diagnosis, not with the determination to prove the case a negative one as is often the fact, but to estimate properly the value of each symptom and sign. If each and every leading symptom of the early case is recorded, then physical signs will be more readily detected and their importance appreciated.

In the group of clinical symptoms most often shown in incipient tuberculosis may be found persistent fatigability, slight afternoon temperature, indigestion, slow loss of weight, hemoptysis, and long continued symptoms of cold. In children the night sweat is often of significance.

Fatigability, not accounted for by everyday exertion, may be produced by a number of conditions, but among them tuberculosis is most important. This is not uncommonly the first symptom noted. A diagnosis of neurasthenia is often made at this juncture and the real cause of the fatigue only suspected when advanced manifestations appear.

A child who has changed from strenuous habits to lassitude needs a searching investigation of his chest.

Following fatigue and accentuating its importance is mild afternoon temperature. Occurring at first occasionally it later becomes established; increased by exertion and in women often at first premenstrual only. After other causes, such as pyelitis and infection of the middle ear have been excluded, an early apical pulmonary lesion or a few infected hilus glands may satisfactorily account for its presence. In a recent publication on "Unexplained Cases of Temperature at the Peter Bent Brigham Hospital" Alt and Barker show that tuberculosis may sooner or later make its appearance as the causative factor in a very considerable per cent. of the cases. A two hourly record, using a five minute thermometer, will give results that are not obtained in any other way.

It is to the gastro-enterologist that the tuberculous often gravitate. The family physician has, perhaps, failed with diet and stomachics to relieve persistent indigestion and the specialist is consulted. An x-ray that includes the chest as well as the digestive tract often solves the problem. One striking feature in regard to this type of gastric disturbance is that complete rest alone will at times relieve it. The majority of physicians in searching for the cause of indigestion may well investigate the chest after examining

*Read before the Section of Tuberculosis of the Massachusetts Medical Society at its Annual Meeting in Plymouth, June 17, 1930.

†Floyd—Chief Examiner, Division of Tuberculosis, Boston Health Department. For record and address of author see "This Week's Issue", page 886.

the condition of the gall-bladder and appendix.

Loss of weight in a typical case of phthisis is often marked, frequently abrupt, and then again it may be absent or only temporary. The rapid loss of weight will arrest the attention of any observer, but where it is transient or has been rapidly regained its absence may prove deceptive.

Tuberculosis cannot be excluded as a possible diagnosis just because the patient has lost no weight or is even obese.

Hemoptysis often has a deeper significance to the patient than to the unheeding physician. The victim, after coughing up blood, is ready to believe that some serious trouble is present and unless he is assured that the cause is some small bleeding point in the throat no urging is required to obtain his full coöperation. A dram of expectorated blood demands careful study and while occasionally its source may be a tracheal varix or from a condition of bronchiectases, in the great majority of cases pulmonary tuberculosis has produced it. The continued symptoms of a chest cold may be an early manifestation of phthisis as many cases present this history. It is not unusual to see a patient whose family history is negative and whose past history is without significance, and yet a severe neglected chest cold has broken down resistance and reactivated a slight dormant lesion. This type of case is invariably the most difficult to detect early as there are no leading symptoms and a simple cold seems to account for the condition. Furthermore an accompanying bronchitis obscures tuberculous activity.

When a physician has obtained in detail some such group of facts as the foregoing and realizes their importance, the results of physical examination will either confirm his suspicions or will spur him on to the close study of an obscure case.

The early physical signs of phthisis have often been summed up by the statement that they consist of the presence of a few constant moist râles in the infraclavicular region. To appreciate the early signs of pulmonary tuberculosis that may occur, the examiner must be familiar with the various types of early lesion. They may be set down as follows:

a. A condition where there are no signs but a positive sputum is present.
b. Hilum tuberculosis.
c. Hilum tuberculosis with intrascapular extension.
d. Basal tuberculosis of limited extent occurring at the bifurcation of the descending bronchus.
e. Apical tuberculosis of the adult.

Where pulmonary tuberculosis may present so varied a picture in its early stages no part of the chest can be overlooked.

The tuberculosis carrier is the type of case where the chest is without abnormal physical signs; the x-ray is negative and yet the sputum is positive. These cases are infrequent and are detected by routine sputum examinations only. They are not clinical cases and are important chiefly in their relation to epidemiology.

Hilum tuberculosis is the type characteristic of early disease in childhood. Its physical signs are spinal and intrascapular, dullness to percussion, increased whispered voice sounds over the seventh cervical and first dorsal vertebra, known as d'Espine's sign, and at times fine moist râles close to the spine in this location. Not uncommonly this form of early tuberculosis may appear in the adult.

Hilum tuberculosis with extension is the type of disease that has taken on activity where it was formerly quiescent. The signs are those of hilum disease with a greater area of infiltration and oftener showing the presence of moist râles. The region involved may extend from the spine to the scapular border. The condition is hard to detect on account of its location in the chest. It may arise suddenly following an acute respiratory infection and the signs of a preceding bronchitis may so obscure this underlying condition that a well-marked lesion is established before it is discovered. A diagnosis will be made by the history, duration of the acute process, pallor, poor appearance of the patient and x-ray findings.

Basal tuberculosis is observed much less commonly than any of the other forms of early tuberculosis. The diagnosis of this type is rarely made from physical signs unless a bronchopneumonia appears near the angle of the scapula and x-ray findings are corroborative. Hemoptysis or even a positive sputum may direct attention to the true nature of the infection.

The physical signs in early adult tuberculosis usually occur subapically just below the clavicle or under the apex behind. A little dullness, limited apical expansion, slight muscle spasm, and a few fine persistent râles are the signs that may be found. So typical are these findings that when they are noted a positive diagnosis will invariably be made. The difficulty in detecting tuberculosis early is not so much the failure to discover the physical signs indicating its presence, as it is to have the examiner suspect that it is present and study the case with this possible diagnosis in mind.

Tuberculosis is still very prevalent and if the profession approaches its early recognition with a careful case history, laboratory tests, including x-ray, and a thorough chest examination the disease will only infrequently be overlooked.

Discussion

Dr. Edward O. Otis, Exeter, N. H.: It is well to remember this many times reiterated slogan "Early diagnosis is for the sole purpose of instituting treatment of active pulmonary

tuberculosis at a time when the prospects of arrest are generally regarded as the most favorable, and the time of treatment reduced to a minimum.'' Unfortunately, however, as Linsly Williams says, ''The majority of patients are already in the advanced stage of the disease when they first consult a physician.''

The disease is so insidious and affects the general health so slightly that the individual does not think it necessary to consult a physician unless for an examination to assure himself that he is all right; or for some real or imagined symptoms which he fears may mean tuberculosis.

After all, does this insistence upon an early diagnosis have all the significance we once thought it had when we first promulgated the impossible rule that only early cases would be admitted to the sanatorium? There are undoubtedly many early cases which recover without knowing that they had tuberculosis, as Nagel's statistics demonstrated by autopsies made on persons dying of other diseases. Again, with our newer methods of treatment, namely, artificial pneumothorax, phrenectomy and thoracoplasty, many more advanced cases are arrested; in other words, everything does not depend on the early diagnosis. As Goldberg, of Chicago, told us last winter, the criterion for entrance into the sanatorium was not the early diagnosis but the prognosis; that is, was there a fair chance of arrest or improvement by the employment of these newer methods, and he gave some striking results from the use of phrenectomy. Furthermore, the phenomenal diminution of the mortality in tuberculosis and its steady continuance seem to indicate that the lack of early diagnosis which we so much deplore does not perceptibly halt or influence this decline in the mortality.

However, we all want to make an early diagnosis when the opportunity offers. The question is, what are the means and methods within the reach of the average practitioner which will enable him to accomplish this? No one, however experienced, can always make a definite diagnosis. One can go no farther than the evidence will permit, but must be sure that all available evidence has been obtained.

The object of an early diagnosis must always be kept in mind. It is the determination of an active constitutional disease for the purpose of undertaking active treatment. We may find a local process in the lungs which may indicate only what has previously taken place or is absolutely inactive, and requires watching or as Lawrason Brown puts it, ''Only a God-fearing life''.

We are all familiar with the usual symptoms of active pulmonary tuberculosis, not all of which, of course exist in any one patient. These symptoms are fever, rapid pulse, loss of weight and strength, digestive disturbances, anorexia, cough, expectoration, hemoptysis, undue nervousness, pleurisy and night sweats. I would call special attention to two symptoms: namely, digestive disturbances, and loss of strength or ''chronic fatigue''. In a young person complaining of indigestion, one should always make a careful examination of the lungs, for this symptom may be caused by the toxic influence of the tubercle bacillus. The other symptom, ''chronic fatigue'' is very common and very suggestive of active tuberculosis. In the analysis of 1,499 cases of tuberculosis in the sanatorium by Linsly Williams, the most frequent symptoms complained of when the patient first consulted the doctor were first, cough and second, constant tire or ''chronic fatigue''. This latter symptom therefore deserves a most careful investigation.

As to the family history, the most important point to investigate, in my opinion, is the family resistance to infection in general, which is far more important than the fact that some ancestor suffered or died from tuberculosis.

The mistake is often made of depending largely upon the physical signs and the x-ray for making an early diagnosis, forgetting that both may indicate only local evidence of disease while no activity exists as evidenced by the absence of symptoms, and consequently requiring no treatment. As Lawrason Brown again says, ''Symptoms without physical signs demand treatment, while physical signs without symptoms require only careful watching.'' Just because the x-ray film is interpreted as showing some shadows which might indicate tuberculosis, or because some abnormal physical signs are discovered but unaccompanied by symptoms, the patient is not necessarily a candidate for the sanatorium.

Of course the sputum must be examined when it can be obtained, which is not always the case, but even when tubercle bacilli are present, it does not necessarily mean active disease, or indicate active treatment. It does mean, however, that the individual is a carrier, and hence must exercise the ordinary precaution against spreading the disease.

In an article on ''Early Diagnosis'' by Dr. Webb of Colorado Springs, published in the *Journal of the American Medical Association*, June 1, 1929, Dr. Webb says in the beginning of his paper, ''Roentgen examination is the only method available for detecting early pulmonary tuberculosis.'' Without modifications, this seems to me a misleading statement. The x-ray may give us the first evidence of local infiltration, but it does not tell us whether that local process is producing any constitutional disturbance. The symptoms must tell us that. However definite the symptoms of toxaemia may be, the x-ray discloses the cause and locality of the focal infection. The purpose of early diagnosis is to detect the beginning of active disease in order to institute early treatment. Physical signs and x-ray investigation are the means of determining the locality and extent of the disease. Alone, they

do not definitely demonstrate the existence of active disease.

We are all familiar with the ordinary methods of physical examinations of the lungs. It is well to be cautious in interpreting what appear to be slight abnormalities in resonance or breath sounds. The ear may be at fault, or mental reactions untrustworthy. One sign, however, is unmistakable, and it is the one upon which we depend; namely, localized and persistent râles. These indicate some definite pathology in the lungs which is almost always a tuberculous lesion.

But even râles alone do not necessarily indicate active disease. Few diseases can exist any length of time without sooner or later producing symptoms, however slight they may be, but until the symptoms appear the individual is not ill so far as sensations are concerned, and therefore, feels no necessity of consulting a physician.

In conclusion, it is well to remember that this reiterated emphasis on early diagnosis is for the purpose of employing early treatment in an existing active disease. The early discovery of activity is for the purpose of applying equally early treatment.

The next paper, entitled "Early X-Ray. Early Diagnosis," was presented by Dr. William B. Davidson, of Holden.

EARLY X-RAY—EARLY DIAGNOSIS*

BY WILLIAM B. DAVIDSON, M.D.†

THE importance of early diagnosis in pulmonary tuberculosis, adult or childhood type has already been emphasized. Volumes have been written on the subject. National, State and local organizations have campaigned and advertised with the idea of "educating the public," until the public of today is as awake to the situation as the physician, or perhaps more so; especially is this true of the ex-patient.

There is no one of us who would like to have the patient better informed than the physician concerning the condition for which he seeks advice and yet I have seen instances where the patient was better informed than the physician.

The important thing, however, which I wish to emphasize in this paper, is early x-ray in the diagnosis of early tuberculosis. First may I make myself clear by defining early tuberculosis. By early pulmonary tuberculosis, I mean the discovery of the tuberculous lesion, whether in child or adult, while the involvement is at its minimum and the patient is not toxic and has few or no symptoms.

Without early x-ray, the diagnosis of an early lesion cannot be made. That means unless your patient is x-rayed early, perhaps at that first visit, your diagnosis will not be early diagnosis. There are many cases of well written medical histories and careful chest examinations with series of sputum examinations in which the presence of early tuberculosis was not diagnosed. The early x-ray taken at that time, not after observation, would complete your early diagnosis. Only the early x-ray taken under correct conditions will reveal the very early lesion. I might cite many examples. I shall mention only two.

Example (1)

A. F. age 30 years. F. "Oh take my x-ray, just for fun." Contact case—no symptoms—no physical signs.

P. 80—T. 99:2 F by mouth—4. P M.—thermometer in mouth five minutes. Early x-ray reveals a small parenchymatous lesion under left clavicle.

Example (2)

The Chadwick Clinic, or The Massachusetts Ten-Year Childhood Tuberculosis program, depended a great deal on their x-ray findings, and I believe are becoming more and more dependent on early x-ray for their diagnosis.

In the past, in my opinion, there were two reasons why the x-ray could not be more depended upon as an aid in the early diagnosis of pulmonary tuberculosis; one, the x-ray plate; the other, the x-ray man.

The x-ray plate was not taken with the modern machines of today, the technique was not as well perfected, the quality of the radiograph was usually poor, and, certainly, some were poorer than others. Lung fields were too black and showed nothing, or too light and showed too much. Distortion and movement were factors. Dark room technique has been perfected. Mr. Eastman is making better films today than ever before; at least they will not explode.

Radiographers tell us not to attempt to interpret poor films, and yet in early days about all the work in which the roentgenologists were engaged consisted in interpreting poor films.

Along with the improvement of x-ray machines, accessories, technique, etc., the knowledge of tuberculosis has developed, and hence the x-ray man's knowledge. Especially is the early x-ray important in childhood type of tuberculosis, not forgetting that the adult can have the childhood type. In differential diagnosis, the early x-ray is indispensable.

The history, symptoms and physical signs, with repeated reports from the laboratory "tubercle bacilli not found," in an adult or child, may be those of bronchial asthma, and yet the x-ray reveals a tuberculous lesion as the cause of the asthmatic condition.

*Read before the Section of Tuberculosis of the Massachusetts Medical Society at its Annual Meeting in Plymouth, June 17, 1930.

†Davidson—In charge of Tuberculosis Clinic, Memorial Hospital, Worcester. For record and address of author see "This Week's Issue", page 886.

If all this be true, you ask, who then should not be x-rayed. I might answer by saying, "No chest examination is complete without an x-ray." Certainly you wouldn't send the case complaining of "spitting blood" and no other complaints, out of your office without an x-ray of his lungs. Yet, as I take histories, I find many who in the past few days or the past five years, give a history of hemoptysis, and no x-ray.

The patient with the "cigarette cough" or "hack" must be x-rayed early, not after ten days' observation, but at that first visit.

The young adult who has no cough but is tall, has grown rapidly, perhaps is underweight, who came at his mother's request: think of the wrong we are doing not to find this boy's tuberculosis early; because of the result of the excellent work the National, State and local societies are doing he came to our office early. We are not only wrong to these and other wonderful associations, but to ourselves, to say nothing of the damage done to the boy. Without the early x-ray this type of case is missed.

It has been my experience that frequently a father or mother brings a perfectly healthy young adult for chest examination, simply because the young adult's friend has tuberculosis, or because the mother has read a poster, "Let your doctor decide."

Don't say, "well an x-ray will do no harm"; say that it is absolutely indicated. If the radiograph amounts to nothing more than a record for periodic health examinations, it's worth while. "Let your doctor decide." I would not decide that a child is not tuberculous without an x-ray examination of its chest, unless of course, the intradermal skin test was negative.

The orthopedic case, the case of extrapulmonary tuberculosis, should have an x-ray of his chest. True, frequently enough these cases, if they have pulmonary tuberculosis at all, usually have good resistance and these lesions are fibroid, but with the use of artificial pneumothorax therapy and the coming of chest surgery in tuberculosis, again early x-ray will do a great deal to aid in the diagnosis of the exact condition of the lungs. May I quote Clive Riviere, of London. "No more hopeful ray of sunshine has ever come to illumine the dark kingdom of disease than that introduced into the path of the consumptive, through the discovery of artificial pneumothorax." I would like to add to that the other methods of collapse therapy. Without early x-ray is there not grave danger of clouding that ray of sunshine and allowing the dark kingdoms of disease to remain in the shadows?

The unilateral case may be discovered with early x-ray, and modern treatment for the advanced tuberculous applied before it becomes bilateral.

In regard to the technique of chest films, I wish only to state a few of the important facts that have been of help to me. The textbooks describe this well. X-ray technicians are becoming better and better trained. Many radiographers prefer their own technique. The technique, too, depends upon the machine in use. In general however, I prefer:

(1) P. A. position, standing, hands on the hips, thumbs forward, elbows forward, feet flat on the floor, chin over the top of the cassette, chest bared in close proximity to cassette. (A warm cassette will aid in this.) Moderately deep breath and held. (With children it may be well to rehearse several times before making the exposure.)

(2) Distance 72 inches. K.V.P. 76-Pr V. 142 M A 100 Time 1/20 to 1/10 of a second. Adult 14x17 and child 11x14 films. Double screens. Tube focus depends upon the part to be x-rayed. There is other technique just as good.

I can see no advantage in the extra rapid exposure. I don't think it has as yet been thoroughly studied. Stereoscopic films have never shown me very much more than the well made flat films. I do recommend the study with flat films of the oblique or rotated and lateral views of the chest. Sometimes a primary focus can be located by an extremely deep inspiration or by the oblique film, that is not seen otherwise. Sometimes it is well to take a view of the apices alone.

Fluoroscopic examination should accompany the radiograph. I shall not mention dark room technique except to say it is as important as surgical technique. Many today cannot tell whether a film is overexposed and underdeveloped or underdeveloped and overexposed.

Interpretation:

This is difficult. Different men view a film differently from the beginning. Personally, I like to look in order at the bony chest, the soft tissues (chest wall, etc.), the diaphragm, each leaf separately, pericardium, heart and larger vessels, mediastinum, hilum, bronchial tree and parenchyma of lungs, beginning as I would percuss from base upwards, to apices.

In tuberculosis as well as other conditions, we certainly must think of our anatomy, physiology and pathology in reading a film. Compare our knowledge of pathology of tuberculosis with the picture.

I am sorry, but I haven't the ability to improve on the classification of tuberculous pulmonary lesions in childhood and adolescence that F. Maurice McPhedran has given us in that brochure, published by the National Tuberculosis Association, entitled "Childhood Type of Tuberculosis. Diagnostic Aids" by Henry D. Chadwick and F. Maurice McPhedran. I refer you to that for a beautiful work. McPhedran recognizes eight lesions:

Focal tuberculosis.
Tuberculous consolidation.

Tuberculous consolidation of a lobe or wedge, retrogressive and benign.

Diffuse, childhood type tuberculous infiltration.

Miliary tuberculosis.

Tuberculosis of tracheobronchial lymph nodes uncalcified.

Tuberculosis of tracheobronchial lymph nodes calcified.

Apical, adult type infiltration of children and adolescents.

I will attempt, from my collection of films, to show you a film, demonstrating each classification as I understand it.

CONCLUSIONS

(1) X-ray your chest case early. Why not at that first visit?

(2) Do not depend on the x-ray alone for diagnosis.

(3) Do not, as someone has very well said, ask the x-ray man to make a diagnosis for you, but with you.

(4) Make frequent x-rays of the case under observation.

(5) Do not attempt to read poor quality x-ray film.

(6) In hospitals and clinics, where the material is available, bring one patient and three x-ray films, without knowing which film belongs to the patient. Try by history of the patient and by physical signs to pick out the film that fits the patient. See if it does. It's good training.

(7) Remember the x-ray man is entitled to the history of the patient and laboratory findings, just as much as the clinician who examines the chest. The clinician would not give an opinion if he had only physical signs.

(8) Compare your history and physical signs with the x-ray film.

HISTORY OF TUBERCULOSIS OF LONG DURATION

Chest Examination Physical signs	*X-ray of Chest* Interpretation of x-ray
Inspection: Drooping of right shoulder. Prominence of angle of scapula. Lagging and diminished expansion, depression above and below clavicle more marked, right.	Right bony thorax depressed. Narrowing of interspaces and ribs seem to leave spine at more of an acute angle.
Palpation: Deviation of trachea. Increased tactile fremitus over right upper lobe.	Trachea pulled to right by fibrosis.
Percussion: Dulness 3rd rib and 4 dorsal spine up right. Complemental space narrowed right.	Homogeneous density from 4th rib anteriorly and 6 dorsal spine up right. Right leaf of diaphragm is high.
Auscultation: Bronchial breathing over area of dulness and increased W. V. question of amphoric breathing. 3 Interspace anteriorly right posttussic suction. Medium and fine râles with and without cough.	Small annular area suggests cavity formation 5 interspace ant. right.

It's check and double check.

The last paper, entitled "The Relationship of Recent Investigations to Diagnosis and Prognosis in Clinical Tuberculosis," was presented by Dr. Charles A. Doan, of the Rockefeller Institute for Medical Research, New York.

THE RELATIONSHIP OF RECENT INVESTIGATIONS TO DIAGNOSIS AND PROGNOSIS IN CLINICAL TUBERCULOSIS*

BY CHARLES A. DOAN, M.D.†

SINCE the discovery of the art of percussion by Leopold Auenbrugger and Corvisart's emphasis upon physical diagnosis as the keystone of the practice of medicine, followed by Laennec, who made the physical diagnosis of chest lesions an exact science, there has been accumulated through the years a rich heritage of signs and indications, which perhaps reached their fullest interpretation in the genius of Sir William Osler. It is, therefore, appropriate that this symposium should have been begun this afternoon with a résumé and reëvaluation of the data to be obtained in tuberculous patients from physical examination.

However, with the advent of more or less routine pathological studies, it soon became evident to clinicians that even with the closest observations with the unaided senses, there were some cases, which at autopsy revealed entirely unforeseen lesions. The later development of the x-ray and its application to diagnosis have given added information, which is reducing materially the number of cases presenting unsolved problems to the clinician, and the speaker who has just preceded me has pointed out quite conclusively the value of repeated x-ray studies in following tuberculous patients.

Yet, with the aid both of careful physical examination and x-ray films of the chest and viscera, I believe the honest clinician will readily admit that there still remain cases in which tuberculosis is suspected, but in which the diag-

*Address before the Annual Meeting of the Massachusetts Medical Society, Plymouth, Mass., June 17, 1930.
The Rockefeller Institute for Medical Research.

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nosis and prognosis remain obscure. It is the challenge of a disease, as subtle as tuberculosis, that has been responsible for the continued search in laboratory and clinic for a more complete understanding of the pathological and immunological aspects of infection with the tubercle bacillus. It is my privilege this afternoon to bring to your attention certain additional criteria, now being acquired through laboratory investigations, which give promise, if the interpretations are correct, of further promoting our understanding of the less obvious phases of this disease.

The value of the peripheral blood count. Arising chiefly out of the attention focused upon a fine differentiation within the mononuclear group of cells, and from the studies on experimental tuberculosis, initiated by Dr. Sabin and her associates, there is coming a new appreciation of the value of the blood count in the diagnosis, and more particularly in the prognosis, of clinical tuberculosis. The supravital technique for staining blood cells has contributed materially to this study. The normal monocyte is a cell both of the connective tissues and the blood and is the unit from which the epithelioid and Langhans' giant cell of the tubercle derive. The lymphocyte, representative in the blood of tissues and lymph nodes, makes up the capsule of small round cells characteristically found surrounding a tubercle. When lesions are extending in the tissues there is frequently an overflow of monocytes into the blood stream, with perhaps the appearance of cells showing qualitative changes of an epithelioid character. On the other hand, when lymphocytes are in high concentration the prognosis in tuberculous disease has been found by long experience to be favorable. Recent experimental observations have indicated that there is a reciprocal relationship between monocytes and lymphocytes, and that where the one is stimulated the other is correspondingly depressed. Thus, the ratio of monocytes to lymphocytes in the peripheral blood has been found to reflect their respective relative proportions in the tissues, and in tuberculosis this ratio forms the basis for an index of the progress of the disease.

Furthermore, the original native M/L index in normal laboratory animals has been found to determine, or at least to measure, a predictable difference in susceptibility to the disease. Those rabbits having a high initial M/L index succumb more rapidly with a more fulminant type of tuberculosis than those having a low M/L index prior to infection, and given the same dosage of the same culture. In the evaluation of the differential count, Medlar has pointed out the significance attributable to the neutrophilic leucocytes in necrosis and cavitation.

It would seem at the present time from the fundamental experimental work in the laboratory, and from the clinical observations reported thus far, that the careful differential study of the blood cells may afford an additional instrument of precision in the analysis of clinical cases of tuberculosis. Some clinical observers already feel that it gives a more sensitive indication of what to expect in the individual case and how to proceed with exercise and the institution of other therapeutic measures than any other single method of study now available.

Recent chemico-biological studies, in coöperation with the Research Committee of the National Tuberculosis Association. Of the biological studies thus far made on the basis of the comprehensive, large scale, chemical analysis of organisms and media undertaken by the Sterling Chemistry Laboratory, Yale University, and by the Pathological Department of Chicago University, those with the lipoids have been carried farthest. The chemistry of the sugars and proteins, as now being studied by Drs. Long and Seibert, Chicago, Dr. Heidelberger, Columbia, and Dr. Johnson and his associates at Yale gives promise of results with important, practical, clinical application in the very near future.

Preliminary biological studies in this laboratory with the chemical fractions thus far available have indicated that the cellular manifestations peculiar to tuberculosis receive their stimulus from the lipoids of the bacillus. Dr. R. J. Anderson and his associates at the Sterling Chemistry Laboratory, Yale University, have partitioned the lipoids from human, avian, bovine, and the non-pathogenic timothy acid-fast organisms. The "phosphatide" fraction, when given into the tissues, reproduces a sterile reaction indistinguishable otherwise from that seen in the disease. Epithelioid cells and epithelioid or Langhans' giant cells develop with lymphocytic infiltrations, and if the animal is permitted to survive, regress without at any time causing embarrassment to the animal or clinical symptoms or signs. Dr. Anderson has isolated certain liquid, saturated, fatty acids from the phosphatide and from other of the lipoid fractions which have seemed to carry the active principle for epithelioid cells. It is impossible to elicit allergic phenomena in animals with this massive development of tubercular tissue. On the other hand, the proteins and polysaccharides produce fever, hemorrhage, toxicity, and in some instances death. Further chemical studies are necessary before a more complete separation of the toxic manifestations attributable to the proteins, as distinguished from those secondary to the specific polysaccharides, may be made. When these reactions are fully understood, the way will be cleared for the development of a purified protein for use in the skin test instead of the Old Tuberculin of variable composition and standard now in use. This will permit valuable quantitative studies in the future, which are at present impossible. The necessity for a close following of the literature in this field in the near future is indicated from the nature and

fruitfulness of the investigations now in progress in the various laboratories.

When the phosphatide is given in antigenic dosage intravenously, an antibody, apparently specific, is formed, as indicated by precipitin and complement fixation tests and absorption experiments (Pinner, Doan). When individual rabbits show a low titre after intravenous phosphatide, an increase in epithelioid cells in the tissues may be found; conversely, when the serological reaction has been more striking, very little cellular reaction in the tissues is evident. These observations, together with the fact that in experimental tuberculosis, either free phosphatide or phosphatide antibody, or both, may be demonstrated in appropriate fluids at certain stages in the disease, form the basis for a precipitin test as an aid to diagnosis when other methods have failed.

The implications of the newer bacteriological studies. The development by Petroff of a method for culturing acid-fast organisms on plates in single colonies has revolutionized our concepts of the bacteriology of this group. Quite aside from the marked differences in colony structure, chromogenic properties, physical and tinctorial characteristics demonstrated within supposed pure strains of organisms by Petroff and his associates of the Trudeau Laboratory, it provides opportunity for virulence studies on the progeny of single organisms as developed in the colony arising from one isolated bacillus. For the first time biological studies may be made with tubercle bacilli on the same basis as those employed in the more rapidly growing pyogenic group, where the single colony in pure culture has always formed the point of departure for all studies.

It has been found that differences in virulence attend the differences in colony development and bacterial structure. The "S" colonies of avian and bovine tubercle bacilli are smooth, mothball-like, moist, easily emulsified in an even suspension, and made up of small, pleomorphic, faintly acid-fast organisms of marked virulence. The "R" colonies are rough, dry, granular, impossible to emulsify or free of flocculi, and morphologically show the typical clumping of long, beaded, strongly acid-fast, branching bacilli, with less virulence.

Two points of importance to the clinician are brought forward by Petroff's work. First, it is essential that great care be exercised in staining sputum and other suspected material so as not to overdecolorize and thus lose the small virulent organisms which are not strongly acid-fast. Cooper's modification of the Ziehl-Neelsen stain with the addition of 10% NaCl to the carbol fuchsin and with counterstain of methyl green tends to fix, and reveal by contrast, all acid-fast organisms present. Second, not only is a Gaffky estimation of the number of bacilli present important, but of equal import is an analysis of the relative percentage of different morphological forms to be found at a given time in a given specimen. Thus, chronicity and relative quiescence are indicated when only small lumps of long, beaded, strongly acid-fast, branching and angulated forms, which produce "R" colonies, are found. On the other hand, an abundance of acid-fast granules (Much's granules), or short, faintly acid-fast coccoid-bacilli accompany active, invading or cavitating lesions, and cultures reveal an abundance of "S" colonies. The virulence of the latter colonies has been greater for the lower animals. Petroff has in fact followed individual clinical cases through periods of spread with subsequent subsidence of the acute manifestations, and has found the morphology of the organisms and the percentage of "R" and "S" colonies as plated and counted, changing and heralding the respective pathological developments. While this work is still in its very beginnings, the possibility of immediate clinical application of the points mentioned is evident. As for its influence upon the current and future study of the mechanism of the disease, that, too, is apparent and fraught with infinite possibilities.

Our personal experimental studies on tuberculosis during the past year have all been pursued, using the single colony plating method of Petroff, with counted numbers of organisms from a single picked colony for infecting dosages. In certain experiments with the "R" and "S" dissociates from the well-known avian strain, A-1, tubercle bacilli, we have observed in both chickens and rabbits the appearance of a few colonies of the type opposite to that originally used for the infection, after one animal passage. For instance, in the case of the "R" organisms, which did not kill rabbits within the limited period necessary for a lethal outcome after the same dose of "S" bacilli, cultures taken when the experiment was ended by sacrificing the clinically well "R" infected animals, showed occasional typical "S" colonies. Organisms from these "S" colonies, when inoculated into a second series of rabbits, caused a rapidly fatal tuberculosis. These observations carry one step farther those studies in which environmental changes in in vitro cultures have led to changes in colony formation and virulence. The conditions within the body which may favor a change from "R" to "S," or the reverse, present a fertile and important field for future investigation. It is here that the biological work and the M/L index concept meet the newer bacteriological studies.

As a corollary it is only necessary to mention the dangers inherent in any method of vaccination with living bacilli, however avirulent they may seem at any particular moment, in the light of these recent bacteriological and biological studies. So long as there remains any possibility of a change in virulence under the influence of environmental or other circumstances, *and* a wide range of susceptibility in different individ-

uals, no living virus should be used as a preventive or therapeutic measure.

Thus it may be seen that the current work on tuberculosis is not only providing new aids to diagnosis and prognosis, but even more fundamental are the contributions which are being made toward the development of new concepts of the mechanism of immunity. The foregoing résumé is presented not so much as the record of certain accomplishments of the recent past, but rather as the promise of future developments of much greater moment to be anticipated. In perhaps no field of medicine at the present moment are current concepts undergoing closer scrutiny, the volume of new experimental evidence accumulating more rapidly, or the theories being held more in a state of flux than in tuberculosis. The clinician should be alert and receptive, but highly critical of the instruments which are gradually being evolved for the analysis and treatment of his tuberculous patients.

Discussion

Dr. Merrill J. King, Boston: After the splendid presentation of Dr. Doan there seems to be very little for me to say. Perhaps I might emphasize, in a few words, the practicability of the application of these methods as routine procedures in sanatoria.

At Mt. McGregor I had the opportunity of being associated with Dr. Medlar, who, as you know, is making intensive studies of the leukocyte count in tuberculosis as is Dr. Doan at the Rockefeller Institute. At this time leukocyte counts of certain patients were being very carefully determined as a basis of treatment at the sanatorium.

This work has been continued for a period of over four years, but in contrast to the studies at Rockefeller, Dr. Medlar has taken into consideration the total white count and differential count of the neutrophile, monocyte and lymphocyte. His work has shown very convincingly, I believe, that the prognosis and course of treatment of tuberculous patients can be very satisfactorily controlled by the study of the leukocytes in the blood-stream.

In the interpretation of the leukocyte count he has formulated three types of cases:—one in which the total white count and number of neutrophiles is increased; in this type he gives a bad prognosis at the time, and believes that the pathological lesion is undergoing abscess formation. The second group is the hyperplastic type; and in this type the total count may be normal, or only slightly elevated, but the mononuclear leukocytes are definitely increased. In other words, instead of four to six per cent., they should compose from ten to twenty or twenty-five per cent. of the total white cells. This hyperplastic picture indicates that new tubercles are being formed, but that they are not undergoing abscess formation. The patient is still in danger and should be confined to bed or carefully treated for active tuberculosis. Finally, the third group is the one in which the total count may be normal and the lymphocytes are at least 30 per cent. This picture indicates a healing lesion and the patient is usually clinically inactive.

Those of you who saw the June Number of the *American Review of Tuberculosis* will recall that there are three articles in this one number dealing with the studies of peripheral white cells in tuberculosis. I think that this is quite significant, and shows that more and more people are taking up this work; and as they do it, I am sure they will find out that it will be very helpful to them, as well as to their patients, in the treatment and prognosis of their cases.

After all, there seems to be not such a big difference between the work of Drs. Doan and Medlar. Many of us have felt that they represented two distinct "schools", entirely separate. Dr. Doan considers only the monocyte-lymphocyte ratio which he believes has diagnostic and prognostic significance; while Dr. Medlar considers the total cell count and includes the neutrophile in the differential picture and he does not attempt to make a diagnosis of tuberculosis.

The bacterial dissociation work which Dr. Doan mentioned is very important and bids fair to give us a new concept into the realm of bacteriology. It is extremely interesting that it has been found that patients with the chronic type of disease who are doing well have predominatingly R type organism in the sputum; whereas those who have done badly and have died are very apt to have a predominance of the S type in the sputum.

The work of Dr. Petroff demonstrated the presence of the R and S type in the BCG vaccine of Calmette. In our first experiments at Mt. McGregor, when the BCG cultures were being continuously transferred on the glycerine-bile medium as recommended by Calmette, we found the cultures were predominantly R in type. Experimental work on animals checked with these findings; ordinarily only slight localized lesions were produced. I recall, however, one series of twelve guinea pigs which were inoculated at the same time, with the same suspension and same dose of BCG vaccine. One of these guinea pigs developed generalized tuberculosis, whereas the other eleven did not. In an attempt to explain this unusual incident we offered the suggestion that perhaps the one guinea pig which developed the tuberculous infection was in some way more susceptible to infection than were the other pigs. This may have some relation to the work which Dr. Doan mentioned in regard to the native M/L index which he has been finding in guinea pigs and rabbits.

It seems to me that as time goes on and the work at the Rockefeller Institute, Mount McGregor, Saranac Lake and other laboratories progresses, that clinicians will become more and more impressed with the practical value of this

work. Dr. Doan believes that his technique will aid in the diagnosis of tuberculosis before the x-ray will show the process just as the x-ray will spot early tuberculosis before the physical signs can be elicited.

Dr. William Dameshek, Boston: I have been interested in studying the blood-picture in infectious diseases, not especially in tuberculosis, but in infectious diseases in general. Most of this work has been done at the Beth Israel Hospital in Boston. Differential counts of the white blood cells have been made according to the method of Schilling. The Schilling "hemogram" (which in reality is a simplified Arneth index) takes into account the response of the bone-marrow leukocytes to infectious diseases. Immature forms of polymorphonuclear cells ("band" forms, etc.) get into the circulation, the number of these immature forms varying directly with the degree of infection. Thus, by doing careful differential counts of the leukocytes from day to day one can get a good idea of the activity of an infectious process. As the disease process becomes less active, the production of white cells in the marrow becomes less hurried and immature polymorphonuclear cells are seen in the blood-stream in fewer numbers.

As the stage of convalescence advances one sees a monocytosis, which is later followed by a lymphocytosis. These facts were brought out, of course, in the work of Schilling over a period of years. The convalescent phase is well seen in the production in rabbits of experimental agranulocytosis which we have lately studied.

In the routine study of about five thousand blood-smears from various diseases during the past three years, a marked monocytosis was noted in about three hundred instances in which tuberculosis was definitely not present. In analyzing these records, it is seen that fully half of these instances occurred in the process of recovery from a variety of infectious diseases. This monocytosis was seen not only in tuberculosis but in rheumatic fever, rheumatic endocarditis, agranulocytosis, subacute and chronic infections of various types such as sinusitis, mastoiditis, subacute bacterial endocarditis, catarrhal jaundice, septicemia, typhoid fever, malaria, etc. With this increase in monocytes, the monocyte-lymphocyte ratio naturally approaches or exceeds unity, so that as a diagnostic measure this ratio (which may be increased either by an increase in monocytes or by a decrease in lymphocytes) has not been very helpful. Furthermore, the qualitative changes in monocytes which have been stressed by Drs. Doan and Sabin I have observed in a good many types of infections, even in general paresis. I wish to emphasize, therefore, that the monocyte-lymphocyte ratio is not at all specific for tuberculosis but that it may be altered in many conditions. As a prognostic measure in following along the individual case of tuberculosis, I have found that the variation in number of immature forms of polymorphonuclear cells reflects more accurately the clinical state of the patient than does the monocyte-lymphocyte ratio.

Dr. Robert H. Nichols, Boston: I want to call attention to a factor here—the general practitioner, a man who practices in the country. Of course, my friends remember that I practice in the city, but my tuberculosis patients come generally from the country, because there more people know of me than in Boston. Therefore, I class myself as a general practitioner with full appreciation of the acumen of the specialist in chest conditions.

It is rather an ethical problem I bring to your attention, and that is the question of stating the diagnosis, after examination, of tuberculosis when one is convinced of its presence. You see, notwithstanding that patients come to us as general practitioners, with early symptoms and signs, as here set forth by Drs. Floyd and Otis, we are too often held up to error by some specialist. Some years ago Dr. R. C. Cabot taught me to assume personally the responsibility of error, if error must be, in the diagnosis of phthisis. The error must not in any case work to the detriment of the patient. Thus I was taught to state the diagnosis frankly when indubitable clinical signs and symptoms were present. At that time the consulting specialist usually upheld our opinions and the patient had the advice and treatment which were obvious on a sound clinical basis. In this connection the general practitioner suffered no ill repute, but today in the face of the meticulous specialist, x-ray, and laboratory discrepancies, things are different. Today the diagnosis of phthisis from good, old-fashioned history and examination is neglected or severely questioned on the basis of a negative x-ray or negative sputum which is discouraging to the general practitioner.

There are, indeed, in the city, specialists who apparently seek to lift themselves by damning with faint praise the general practitioner who has a chance to follow the patient and who often in the long run is as correct in his estimation as the specialist himself. The question of when to state the diagnosis then becomes increasingly imperative. I personally believe we swing rather too much toward statistical machine-made diagnosis to the neglect of the good, old-fashioned method, using the technique of percussion and auscultation according to the methods of Auenbrugger and Laénnec. It seems to me we all would perform a better service if we employed more exacting physical examination technique, notwithstanding the proved value of x-ray and the laboratory. I am frequently seeing cases of early phthisis whose x-rays are definitely negative but whose sputum or examination later show tuberculosis. Dr. Joress, of Rutland, showed that 30% of the phthisis cases there had

no tubercle bacilli in the sputum. Along with this I have had the rather ripe experience of lung specialists who, with the disadvantage of seeing the patient once only, state the chest normal, indeed in excellent condition, when the few localized symptoms, with a suggestive history, show the patient later tuberculous. Then, too, the x-ray, laboratory, and the specialist are not always available in the country and frequently impossible of utilization in the city. Under these conditions where, in a circumscribed area of the lung, there are increased percussion dullness, harsh breath sounds, increased tactile fremitus, increased whispered voice, especially a few fine râles after cough, along with a slight elevation of pulse and temperature, we certainly have sufficient evidential signs to diagnose phthisis correctly. In my opinion, these signs could be added with impunity to the five cardinal points of Lawrason Brown.

These difficulties in diagnosis I have not heard discussed to any extent in meetings where the problem of tuberculosis is raised. I believe it is worthy of attention as this question is frequently raised in general practice—When can the general practitioner with full conviction safely state the diagnosis of pulmonary tuberculosis?

DR. M. J. STONE: I especially enjoyed the remarks of Dr. Otis, emphasizing the fact that only symptoms should be treated. A good phthisiologist, like an artist, is perhaps never made, but is born. I mean by that, the ability to evaluate properly his patient's symptoms. How much weight we shall give to some patients' recital of their symptoms is a matter of conjecture.

Tuberculosis as a rule is a chronic disease, and as such, the patient's psychology is easily affected by his environment, finances, social and family relationships, etc. It is on account of these factors that he frequently has an axe to grind, and either actually consciously or unconsciously minimizes or enlarges upon his symptoms.

A patient of mine who was supported by a charitable organization and had frequent visits from that organization by the social workers, has always greatly exaggerated her ailment, perhaps for the reason that the social workers should not lose their interest in her.

Another patient who was recently married, in order to keep her young husband happy, always assured herself, as well as her husband, that her health was improving until the day of her death.

Temperature, pulse, weight, etc., are not fine enough symptoms to rely upon. There is definitely a neurasthenic slight rise of temperature and pulse, and as to weight, the process in the lungs may actually advance and the patient gain weight. For this reason the differential white blood study is now of the greatest importance in aiding the clinician to interpret activity.

The work of Dr. Doan, then, is extremely important, as it supplies the missing link in our intelligent treatment of pulmonary tuberculosis.

DR. WAKEFIELD: I am immensely interested, though I wondered where I was at part of the time this afternoon. I have taken several notes. The first one I have down here is the matter of a chronic cough in children. Some of you read in the *American Medical Association Journal* an article about a year and a half ago, on the non-tuberculous child; a very brilliant article by a Chicago doctor. He pointed out that if you had a chronic cough in a child it was pretty sure not to be a tuberculous cough. If you get a "chronic" cough in a "tuberculous" child, the child dies before it becomes chronic. If it is a chronic cough, it is usually not tuberculous. That certainly has proved out in the work that the Chadwick Clinic is trying to do.

Now, on the finding of the "quiescent" case. One of the great problems of the childhood clinic is the case of pulmonary tuberculosis in the adolescent boy or girl that is called "quiescent" by the family doctor. I wish somebody would tell me what and how in the world they can tell the quiescent case in an adolescent boy or girl. I will defy anyone to prove a case to be quiescent in a boy or girl. We have had tragedy after tragedy with children, which if treated as pulmonary might have been saved; but the family doctor says, "This is quiescent; I am going to let it go along."

I could give you case after case and will give you one or two. There was a case of a girl in a nearby town. The Clinic diagnosed it on x-ray as a pulmonary case. The local doctor said, "No." The School Board insisted that the doctor send in a statement each month that it was quiescent. The doctor brought in that statement each month, until one month he brought in a certificate of death due to a hemorrhage. No signs, no symptoms, absolutely nothing you could get except x-ray, until the hemorrhage occurred.

How many times we have found that hemorrhage is absolutely the first clinical manifestation in the case of pulmonary tuberculosis!

Another case: A flapper that came up to Westfield a short time ago; a perfectly beautiful creature, with absolutely no signs or symptoms. We found the slight pulmonary mottling in the x-ray and urged her to go to a sanatorium. She wouldn't go. But she was curious about herself, and a short time afterwards came back again. The mottling had spread, but there were still no râles, no fever. We got her to go into a sanatorium; but it was entirely too quiet—she couldn't dance or go out and have a good time. She ran away. She came back to us last summer. Both lungs were mottled, and râles and dullness at last, utterly hopeless.

So I might go on. But there is another side to the same thing. This year we have had a

case where a doctor, and a very good one, had diagnosed a school nurse as a pulmonary case—dullness, râles, underweight, nervous. She wanted to have the von Pirquet test and x-ray. We tested her, gave her an x-ray, three x-rays in fact, but there was nothing there. Going into it carefully we found a definite nasal infection. There had been a boy waiting around the corner for three years for her "tuberculosis" to heal—they were married the next week. That girl had been held up on "symptoms" for three years, as a tuberculous patient, and she wasn't tuberculous at all.

I do not see, and I wish somebody would tell me, how we are going to call quiescent a case where you get mottling in the x-ray of the child. If you will come to Westfield and go into the wards of the adolescent girls, you will find practically no symptoms in a good many of these girls, and you wonder why they are there. But you go back after a while (and that is the tragedy of this work), and you will find the "symptoms" have developed. They go downhill, and in a month or two they are gone, in spite of everything we can do. "Quiescent" cases? We know there are often no physical signs or symptoms till late in the disease.

There was a case which came to Westfield a year or so ago. She was diagnosed as a pulmonary case and recommended by the Chadwick Clinic for hospital treatment. She then went to a doctor in Boston, a very good diagnostician in tuberculosis, but he refused to accept our diagnosis. There was something there, but he didn't think it was necessary to send to a sanatorium or have any special care. He treated her along for a little while, till she suddenly had a hemorrhage. He then did a pneumothorax and sent her up to Westfield for us to care for. Another "healed" "quiescent" case in an adolescent overlooked till too late.

How in the world are we going to determine the quiescent case? I trust not by neglect of care till any treatment is futile.

CHAIRMAN GRIFFIN: Does anybody else wish to enter the discussion?

DR. JOSEPH H. PRATT, Boston: I wish to make a plea for the use of the subcutaneous tuberculin test as an aid in the diagnosis of doubtful cases. I don't know why it is that the tuberculin test is so rarely employed at the present time. It remains, now as in the past, a very great help in the recognition of doubtful cases of pulmonary tuberculosis; and there are still many cases in which the diagnosis by other means is not definite.

In the past twenty-five years I have resorted to the subcutaneous tuberculin test a good many times. I use first a tenth of a milligram of old tuberculin; then if no constitutional reaction occurs, one milligram, and a maximum dose of ten milligrams if the smaller amounts give no reaction.

It is sometimes said that the use of tuberculin is dangerous. In my experience there has never been any untoward result. If a reaction occurs, I always keep the patient quiet in bed for some time after it has disappeared.

I'd like to ask Dr. Doan whether it would be possible here in Massachusetts to have the blood tested by this new precipitin test which he has described?

Today no examination of the lungs for suspected tuberculosis is complete without an x-ray of the chest. There are cases without symptoms, certainly, as the last speaker has said, in which the x-ray reveals tuberculosis of the lungs. Within the past few months I have seen two cases of this type, in one of which the disease steadily spread until it involved the greater part of the upper lobes of both lungs, although the patient remained clinically well.

The other case has had a series of pictures taken during the past four years which showed what was regarded by experts in tuberculosis as healed disease. At the time he came under my observation he was practically free from symptoms. When I put that patient to bed he gained in eight weeks, without forced feeding, twenty-four pounds. I believe that increase in weight is of diagnostic value. I may be wrong, but I doubt if in any disease except tuberculosis a patient kept in bed for eight weeks will increase this much in weight on an ordinary diet. I would like to hear of cases of neurasthenia or other diseases, forced to stay in bed, that gained weight so rapidly and in such an amount. I suggest that rapid increase of weight under strict bed rest treatment without forced feeding probably indicates the presence of active pulmonary tuberculosis.

CHAIRMAN GRIFFIN: Dr. Doan, would you reply to the questions?

DR. DOAN: I certainly have no quarrel with our friend from Beth-Israel. It is true that the Schilling index in the neutrophilic group may indicate increased bone marrow activity in tuberculosis, which as Medlar has well demonstrated, may be an indication of necrosis and cavitation. However, it is equally as certain that the number of pathological conditions in which a "shift to the left" has been observed makes such an observation *per se* fully as non-specific as the Doctor seems to feel is the case with the M/L index. With reference to the value of the M/L index in tuberculosis, this, of course, must rest entirely with the individual. Just as the x-ray has varied in value with the experience and interpretation of the physician, so any value in the differential counting of the blood must in the last analysis depend upon the experience and interpretation of each one of us who are studying this means of acquiring information about pathological processes.

It must be remembered that the body has a limited number of cell types with which to respond to all insults, consequently we must look

for the finer differences, rather than gross abnormalities only, in the blood cells for differential diagnosis and prognostic criteria. The neutrophilic leucocytes respond in the initial stage of practically every pathological process, more particularly in the pyogenic infections, consequently their reaction is perhaps the least specific of all the cellular responses.

When we come to the mononuclear group of cells in tuberculosis, contrasted with other diseases, certain qualitative changes, which I did not sufficiently emphasize in my address, are of help as well as the quantitative data. While the M/L index does change under conditions other than tuberculosis—and we are only just now beginning to learn of these changes since the mononuclear group of cells is receiving differentiation at the hands of clinicians—in so far as our information goes at the moment the quantitative changes are more marked and follow a more definite reciprocal relationship than in disease of other etiology, and the qualitative changes are even more characteristic.

We should, of course, as I said at the very beginning of my talk this afternoon, not only consider the whole blood picture, the finer bacteriological criteria and the evidence which x-ray can give, but also every other method of study of the patient beginning with a thorough history and physical examination. It is only then that we as physicians are doing our whole duty. In other words, we must know the whole reaction of the whole individual to the insult he is attempting to meet.

With reference to Dr. Pratt's question, the chemical work is giving promise of releasing for clinical use in the near future a purified tuberculo-protein for tuberculin studies. It would seem from the work already done that the active skin reacting principle in Old Tuberculin is the protein, which if it can once be freed from the many impurities which now contaminate commercial Old Tuberculin, will provide material for quantitative studies, and possibly results, both diagnostically and therapeutically, not possible of attainment heretofore.

A brochure is being prepared, in which the phosphatide precipitin test will be described, for distribution when quantities of this material become available from the pharmaceutical houses now experimenting with the large scale production of these bacterial products. Thank you.

Dr. Frederick E. Withee: It seems to me that tuberculosis is a very serious form of disease which the Department of Health is trying very hard to overcome; and I think it would be a good scheme to go on record that this section is heartily in accord with Dr. Bigelow's suggestion, that all milk be pasteurized.

Chairman Griffin: Do you make that as a motion? Dr. Withee makes a motion that this section is heartily in accord with Dr. Bigelow's suggestion that all milk be pasteurized. Any discussion on the motion?

The motion was seconded.

Chairman Griffin: That motion has been made and seconded. All those in favor say "aye"; opposed "no". So voted, and the Secretary will please see that that is done.

Has Dr. Daniel O'Brien anything to add?

Dr. Daniel O'Brien: I'd like to ask why tuberculin differs after a period of three or four months? Accidentally I discovered two weeks ago Friday a clinic which was very congested (350 children). I had used tuberculin that Dr. Landry at Westfield had given me from a clinic in another country town three months before, where 103 were tested with no reaction. He asked me if I had any with me. I thought I had a new supply from Saranac, but it happened to be the other he gave me three months before; and I got just as much reaction in this last clinic as I did before with the same tuberculin he used in another town. Why should this tuberculin cause the same reactions three months later? Of course, it was on a very cold day in winter when we gave it before, and this was a very hot day two weeks ago Friday.

Out of 103 tested—we wrote Dr. Morton about it—we didn't have a single reaction in another town with the same tuberculin. I didn't intend to use it; I thought I had a new supply, but when I got home I found I had the old. I wonder if there is an explanation of that?

Chairman Griffin: I wonder if Dr. Doan could tell us the reason.

Dr. Doan: The differences in Old Tuberculin, which I mentioned, are dependent upon the constitution of the media used, the strain of organisms selected, and the period of growth before harvesting the organisms. Even though the same synthetic formula were used in making the media, the different lots of chemicals employed might vary sufficiently to influence the results. Only a purified protein product should be the aim of our laboratories and research groups in the study of this problem. Thank you.

Chairman Griffin: I wish to thank the readers and the people who have been here today, in making this a very interesting meeting.

The following officers were elected to serve for the ensuing year in the Section of Tuberculosis: Chairman, S. H. Remick, Reading; Secretary, Roy Morgan, Westfield.

The meeting adjourned at five twenty-five o'clock.

EXAMINATION OF THE RECTO-SIGMOIDAL REGION

BY SIMON B. KLEINER, M.D.*

THE plea for proper examination of the lower bowel is not new, but its importance cannot be overemphasized. Every consulting internist, every surgeon, and all teaching clinics lay much stress on the value of such investigation. The pediatrist realizes its worth in recognizing intestinal intussusception, rectal polyps, and other conditions particularly common to infants and children. In obstetrics, digital rectal examination is routinely used to determine progress in delivery, and frequently it is an aid to the gynecologist, supplementing vaginal examination. The genito-urinary surgeon particularly requires low rectal examination to diagnosticate prostatic and seminal-vesicular lesions.

Pathological conditions which can be found by rectal examination are, of course, endless. Some are simple lesions, easily corrected but capable of causing most irritating and aggravating symptoms; others causing no symptomatology at all, may be of the gravest significance. It is, therefore, most unfortunate that this form of examination has been so neglected, or, when an attempt is made to perform a so-called rectal examination, that such an incomplete investigation of conditions is made. This is probably due to the fact that occasionally a carcinoma of the lower bowel can be palpated by digital examination and the physician consequently feels that a digital rectal examination may ease his conscience in ruling out recto-sigmoidal carcinoma. According to Gant[1], however, thirty-five per cent. of carcinomas of the lower bowel are situated in the upper rectum and in the recto-sigmoidal junction, and are consequently out of reach of the examining finger, but may be easily seen through a proctoscope or sigmoidoscope. It is, therefore, most important that every case presenting the slightest rectal symptom should have a sigmoidoscopic examination.

Rectal examination is very simple in technique, is usually absolutely painless, and following it the patient may usually return immediately to his regular work. The preparation, if any is required, is quite easy to carry out. Why is it, then, that so few rectal examinations are performed?

It is possible that the patient is as much to blame for this state of affairs as the physician. To the average patient, rectal examination, in anticipation, looms up as a dreadful ordeal, and patients, when advised of the necessity of proctologic examination, often put it off, telling the physician they will return, and then waiting until it is too late. On the other hand, the physician is often poorly equipped for this type of investigation. Not only may his armamentarium lack proper instruments (and what physician can afford to own all of the special apparatus appearing daily in the market?) but many men feel that they are not properly trained to make a rectal examination, or if they do feel equal to an attempt, it is usually limited to insertion of the finger in the rectum, palpation of the prostate, and an effort to determine if any masses are present. Many practitioners who do own sigmoidoscopes are afraid to use them because of the danger (and it is a real one) of either perforating the intestine, or of doing other damage.

A proper recto-sigmoidal examination may be performed by any physician, but because of the time involved, the possibility of causing damage or even discomfort to the patient, as well as the chance of not recognizing the pathology present, it is perhaps advisable that this type of inspection, along with cystoscopy, ophthalmoscopy, laryngoscopy, etc., should be reserved for especially trained individuals.

A proper and thorough rectal examination may be divided into several steps, which will be described briefly in the order in which they are carried out. Strange as it may seem, the first step, inspection of the anus and the surrounding skin, with the buttocks separated, is quite frequently ignored. This inspection is quite important, as it shows the presence of fissures, ulcers, skin tags, fistulas, external and thrombotic hemorrhoids, and other lesions common to the anal region. It will also reveal the presence of acute inflammatory changes, chancres, soft chancres, and like conditions. The shape of the anal opening should be noted, as well as the color and condition of the skin, and any discharges, such as pus, blood, mucus, and the amount of fecal staining. Prolapse, either of internal hemorrhoids, polyps, or of the rectum itself, may also be observed.

This preliminary investigation should be followed by palpation, which will give further information regarding acute inflammatory processes. In addition, deep indurated areas, such as fistulous tracts may often be traced by external palpation. Following this step, an internal digital examination should be made. The examiner should wear either a surgeon's rubber glove, or a finger-cot supplemented by gauze or cotton wound about the base of the finger. With the use of electrically lighted instruments for direct examination, there is no longer any necessity for making digital rectal examinations with the bare finger. Lockhart-Mummery[2] states, in his last edition of *Diseases of the Rectum and Colon*, "Personally, it is now many years since I have examined a rectum with my bare fingers." He prefaces this remark with a discussion of the possibility of physicians contracting syphilis

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from making rectal examinations, and his comments are very apt.

In making a digital examination, the position of choice is the knee-chest or knee-shoulder position. However, in examining women, a very good digital examination can be made with the patient in the left lateral decubitus. Occasionally, the squatting position may be required in order to bring down a lesion high up in the rectum. The Hanes position is preferred by some men, and is also of considerable value. The patient should be properly draped with a sheet having a hole in its center about twelve inches in diameter. This draping, and any of these positions (excepting the squatting posture) can be used in the remaining steps of the recto-sigmoidal examination.

The introduction into the anal canal of the lubricated, protected index finger can be carried out without any pain or discomfort if it is carefully performed. The finger should be carefully stroked forward over the anococcygeal region several times, after which it may be readily inserted. This really amounts to slight massage of the region and prepares the patient for the examination, relieving nervous tension and protective spasm of the sphincter. Of course in cases of fissure, digital examination will probably be quite painful and will require a local anaesthetic, though by placing the palmar surface of the finger toward the lesion, and pressing in the opposite direction, the pain may often be partially or entirely avoided.

Among other things, digital examination in males reveals the state of the prostate—the presence of nodules, or masses, any increase or decrease in the size of the lobes, induration, etc.; and it also shows the condition of the seminal vesicles. In female patients, the cervix uteri may be readily palpated and is often interpreted as an abnormal mass by novices. Hemorrhoids and likewise the tracts of fistulas, are sometimes, but not always, palpable; other indurated areas, polyps and other new growths are often within touch of the examining finger.

Examination of the rectum by palpation may be supplemented by the combined abdominorectal method, using the free hand to palpate the abdomen, or by the vaginorectal method in women. Both of these maneuvers often give valuable additional information to the examiner.

Following digital inspection, an anoscope should be inserted. There are any number of varieties of this instrument, varying from those with distal end cut off at a right angle, through a long line of specula with oblique ends and fenestrated openings to the bivalve group which are now rarely used. Each operator must choose those best suited to his work, and the same applies to choice of either head mirror, head lamp or reflected light from a condenser lamp for illumination.

Much information will be gained by observation through the anoscope. With the patient properly placed in the knee-shoulder position, the rectal ampulla will balloon out when the speculum is introduced and will show the condition of the mucosa of the rectum and anus—whether it is anemic or inflamed, the presence of varicosities, ulcers, polyps, carcinomata and other lesions. After a thorough inspection through this instrument, it should be slowly withdrawn, the surgeon observing the anal canal carefully during this process, thus getting a second, and probably better view of internal hemorrhoids, papillae, Morgagni's crypts, and other normal and abnormal conditions.

Following this examination, a longer proctoscope of the Kelly type (15 centimeters long) may be passed. This should be well lubricated, and with the obturator in place, should be inserted gently, first aiming it forward toward the umbilicus for a few centimeters, and then allowing it to take a posterior direction. Again and again emphasis must be laid on that most important warning in passing rectal instruments—never to use force! It is perhaps best, if this instrument is employed at all, not to use one which is illuminated itself, but to rely on reflected light, which may be easily thrown into such a short instrument, and this will leave the entire lumen free for the use of forceps for biopsy, removal of foreign bodies, etc.

The most important, as well as the most delicate part of a complete rectal examination is, of course, examination through the sigmoidoscope. The illuminated sigmoidoscope was originated by Désormaux[3], who demonstrated it before the French Academy of Medicine in 1853. It soon fell into disuse, however, and did not again come into common use until it was popularized by Kelly. Since that time, it has come to be generally employed and many different types are on the market, each differing in minor details, especially as to position of the illuminating lamp, but all having the same general principle.

In preparing the patient for a sigmoidoscopy, some operators prefer to give a purge, castor oil by choice, the night before the patient is to be examined. Some, on the other hand, order enemas until clear, administered either at home, a few hours previous to examination, or given immediately beforehand, at the office or hospital. Still other men prefer to attempt an examination without any preparation, claiming that the appearance of the bowel wall will then be that which is normal for that case, and that the normal condition of the fecal material can be seen. This latter method is the one that is used at the out-patient department of St. Mark's Hospital for Rectal Diseases in London, and it is also being used successfully at the author's clinic at the Yale Medical School. If the amount of feces in the lower bowel hinders examination, the patient is told to return on the next clinic day, having taken an ounce of castor oil the previous night.

Each of these methods has its disadvantages. The enema method usually results in much embarrassing fluid being left in the rectum, necessitating a good deal of swabbing to keep the field of vision clear. Probably 75% of the patients can be examined immediately without preparation, and it is certainly simple enough to ask the other 25% to return after having taken castor oil.

The sigmoidoscopic examination can be made immediately after inspection through the anoscope, with the patient in the same position for both maneuvers. The sigmoidoscope may in most cases be inserted for at least 25 centimeters, which is the usual length of the instruments sold by dealers in this country, although it is often possible to examine the lower bowel up as far as 35 centimeters. For this reason, anyone doing much proctological work should be equipped with a 35 centimeter sigmoidoscope.

The technique of inserting the sigmoidoscope is described in all works on the subject, and is readily mastered. However, as mentioned above, the greatest of care must be taken to avoid damage of the mucosa, and no force must be used, because in case of a lack of mobility of the sigmoid, due to a short mesentery, there is grave danger of tearing this mesentery and its accompanying vessels.

By inflating the bowel occasionally, as the instrument is passed, the intestinal wall can be blown aside and the end of the sigmoidoscope advanced as an opening offers. In instructing student groups in this technique, the author likes to compare it to a football game in which every puff of air blown into the instrument provides "interference" and one follows this "interference" just as a player, carrying the ball, looks for his open spaces into which he may plunge. By way of further caution, it should be mentioned that a sigmoidoscope should never be passed blindly for more than the initial ten centimeters, and that no instrument should be introduced into the anal canal unless it be protected by an obturator. In passing the sigmoidoscope, after it has been introduced blindly for several centimeters, with the obturator in place, the obturator should be withdrawn and the diaphragm and bulb applied, allowing further introduction to be carried out under visual control. The patient should not experience any pain during this examination. There may be slight discomfort due to distention from the air which is blown in, and the patient may experience a desire to pass flatus both during and after the examination, but it is unusual for any real pain to occur.

The lesions to be seen through the sigmoidoscope vary from varicose veins to advanced malignancies. Description of them will not be attempted at this time. However, before one can endeavor to diagnose lesions found in this manner, it is wise to examine enough normal cases to become familiar with the normal rectal mucous membrane.

Examination of the rectal mucosa is probably better performed as the sigmoidoscope is slowly withdrawn, for on insertion the operator is often occupied with the proper passing of the tube. During this careful withdrawal, every centimeter of the lower bowel can be minutely scrutinized and any doubtful areas may be further examined with a magnifying lens which fits over the proximal end of the instrument. As the rectal ampulla is reached, it will be necessary to move the tube in many axes in order to examine the entire area, since the mucous surface here is quite extensive.

Biopsy must not be overlooked in cases of malignancy. It is not a difficult procedure and is usually painless. It should be attempted when there is the least question of malignancy in the examiner's mind. The technique is described in a paper by Bensaude[4] on the subject.

There are other steps which may be taken to determine pathology of the rectum, such as barium enemas, culturing the stools, microscopy of the stools, etc., but these methods may be reserved for the obscure cases. The main object of this paper has been to emphasize the ease with which a thorough proctological examination can be made, and to try to call attention to the necessity for such examination in every case presenting rectal symptoms.

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PREVENTIVE MEDICINE AND MENTAL DEFICIENCY

BY MARTIN W. BARR, M.D.,* AND E. A. WHITNEY, M.D.*

IT is now generally accepted that the idea of preventive medicine should be foremost in all matters medical. Much has been accomplished in this field with certain highly contagious diseases: notably smallpox, diphtheria, typhoid fever and scarlet fever. Highly commendable work is being carried out in national, state, and city health departments in preventing these and other diseases.

However, application of the principles of preventive medicine to the mentally ill or handicapped is relatively new thought and not widely accepted. With the advent of the mental hy-

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giene movement, twenty-two years ago, came the idea of applying prevention to mental disease and defect.

severe injuries in early infancy and childhood, (3) heredity. There are, of course, many minor causes acting in individual sporadic cases, but in

CHART 1*

Causes acting before birth		No. of Cases		Percentage
Family history of Idiocy and Imbecility		1222		24.44
Abnormal condition of mother during gestation:				
A. Physical	221)		4.42)	
B. Mental	279)	500	5.58)	10.00
Family history of Phthisis		373		7.46
" " " Insanity		342		6.84
" " " Intemperance		276		5.52
" " " Minor neuroses		149		2.98
" " " Epilepsy		142		2.84
" " " Cancer		79		1.58
" " " Consanguinity		70		1.40
" " " Scrofula		43		.86
" " " Syphilis		42		.84
" " " Disease of the Cardiovascular System		31		.62
" " " Goitre		14		.28
" " " Attempted abortion		5		.10
Total		3288		65.76

Causes acting at Birth	No. of Cases	Percentage
Instrumental Delivery	134	2.68
Difficult Labor	75	1.50
Premature Birth	46	.92
Accidents	25	.50
Deficient Animation	16	.32
Total	296	5.92

Causes acting after Birth	No. of Cases	Percentage
Epilepsy	337	6.74
Injury to head from fall	264	5.28
Encephalitis	165	3.30
Meningitis	128	2.56
Scarlatina	112	2.24
Accidents	57	1.14
Abuse, neglect, exposure, etc.	50	1.00
Tuberculosis	39	.78
Gastro-intestinal disease	36	.72
Measles	30	.60
Abuse of drugs	26	.52
Masturbation	25	.50
Typhoid Fever	25	.50
Infantile paralysis	22	.44
Whooping cough	21	.42
Marasmus	20	.40
Insolation	17	.34
Spinal disease	15	.30
Diphtheria	12	.24
Chorea	6	.12
La Grippe	3	.06
Hydrocephalus	4	.08
Tobacco	2	.04
Total	1416	28.32

Causes acting before Birth	3288	65.76
Causes acting at Birth	296	5.92
Causes acting after Birth	1416	28.32
Total	5000	100.00

*Note: This Chart represents the study made of over 6000 cases by one of us (M. W. B.). Many of these records had to be disregarded because they were incomplete or inaccurate.

It is the purpose of this paper to deal with but one phase of prevention, namely, the prevention of mental deficiency. There are three major causes of mental deficiency: (1) accidents or injury at birth, (2) acute illnesses or general all fall under one of these three classifications.

How may preventive medicine be applied to these three major causes? First, let us consider accidents or injuries at birth. Oftentimes

the cause of these is our modern craving for speed. Speed is no respecter of persons, and many a good obstetrician has fallen under its spell, to the detriment of his patient and her child.

In this study of 5000 cases of mental deficiency at Elwyn, as shown in the accompanying chart, it was found that in about six per cent. accident or injury at birth was the direct cause of the mental defect. It is our feeling that many of these individuals might have been saved to a more useful life had the obstetrician exercised less speed and more care. So it is our contention that better practice of obstetrics can eliminate considerable mental deficiency and thereby be a potent factor in preventive medicine as applied to mental hygiene.

Secondly, in this same study of 5000 cases, it was found that in about 28 per cent. the mental deficiency was attributable to acute illnesses or severe injuries of early infancy and childhood. The ranking order of these acute illnesses is as follows: encephalitis, meningitis, scarlatina, gastro-intestinal diseases, typhoid fever, infantile paralysis, whooping cough, diphtheria, chorea, and influenza. Another condition, either coincident with, or a factor in the cause of, the mental deficiency was epilepsy, and we have listed this condition among those in our second major classification of the causes of mental defect. Among the severe injuries listed the most prominent is injury to the head from a fall, occurring as the causative factor in over 5 per cent. of our cases; other accidents could be held accountable in but a little over one per cent. of the cases studied.

With the advances made in the prevention of scarlatina, diphtheria, whooping cough and measles, we may logically expect in the next generation a drop in the amount of mental deficiency attributable to these diseases. Modern pediatrics deserves to be commended for its diligence in preventive medicine as a factor in lessening feeblemindedness.

Next we come to the third, and by far the most potent, factor in the cause of mental deficiency, heredity. In nearly 25 per cent. parental idiocy or imbecility was the direct cause of the mental deficiency, and in 10 per cent. maternal abnormal mental or physical conditions were factors. Definite family history of phthisis, insanity, intemperance, neurosis, epilepsy, cancer, consanguinity, scrofula*, syphilis, cardiovascular diseases, goitre, and attempted abortion, in the order named, were found to be present and are therefore listed as among those causes of mental deficiency acting before birth.

From this study we feel that to attack properly the problem of preventive medicine as applied to mental deficiency, we must devote a large part of our efforts to combating hereditary influences. The question immediately arises as to how this can be done.

We feel that it can be approached in three ways, namely: sequestration and segregation, more stringent laws relative to marriage, and sterilization.

The problem is being attacked along these three lines now. Sequestration or segregation has been practiced in this country since 1848. But when we consider that there are estimated to be 1,200,000 feebleminded (Popenoe) in the United States, and of these only about 75,000 are receiving supervised care, we can grasp the hopelessness of segregation. With regard to marital laws[1], there are certain of our States that have some statutes, and efforts are being made constantly to increase the number.

Legal limitations exist now in some states as regards the following subjects: (1) parental consent, (2) age, (3) bigamy and previous marriage, (4) license, (5) consanguinity, (6) marriage by force, etc., (7) ceremony, (8) venereal and communicable diseases, (9) insanity, feeblemindedness, epilepsy, and other forms of hereditary degeneracy, (10) criminality, (11) alcoholism and narcoticism, (12) miscegenation, and (13) annulment of marriage.

Lastly, let us consider the desirability of sterilization. The first to advocate this procedure was the late Isaac Kerlin[2] of Elwyn. In 1892 he first called attention to the desirability of using sexual sterilization as a preventive measure. Since then many articles for and against the procedure have appeared. At Elwyn we have constantly maintained the desirability of the measure[3].

In the past five years we have sexually sterilized seventy-one patients at the request of their parents or guardians.

CHART 2

ATTITUDE OF PARENTS TOWARDS OPERATION

Favorable	75
Unfavorable	7
Doubtful	8
Refused to state	10
Total	100

Here it may not be amiss to investigate the attitude of parents towards this procedure. Interviews with one hundred parents on the subject found 75 of them favorably disposed towards the subject when it was properly presented to them, and only 7 were definitely opposed. The reasons for the opposition were: adverse religious scruples, fear, and parents of too low mentality to understand properly what was desired. Eight parents could not decide, and ten refused to commit themselves for or against the operation.

From our observation above, we feel that if parents of mentally deficient children are properly approached, and the operations and their

*We use the term "scrofula" since it was found to be of so common usage in patients admitted to Elwyn in the latter part of the last century. Undoubtedly these should be considered tuberculosis.

results explained, that there will be little difficulty in obtaining written consent. Therefore, it is for the benefit of the remaining 25 per cent. who may need the operation because of certain hereditary conditions that it is desirable that we have in each State legalized sterilization of the mentally unfit.

CHART 3

ATTITUDE OF PATIENTS TOWARDS OPERATION

	Males		Females	
	Number	Per Cent.	Number	Per Cent.
Favorable	26	50.9	12	.60
Indifferent	18	35.2	6	.30
Displeased	7	12.9	2	.10

After considering the attitude of the parents, let us now consider what the attitude of these 71 mentally deficient patients was to their operations. We found only 10 per cent. to be definitely opposed to the procedure and 60 per cent. welcomed it. It was chiefly those of lower mentality who were opposed.

CHART 4

AGES OF STERILIZED PATIENTS

Ages	Males		Females	
	Number	Per Cent.	Number	Per Cent.
10-14	10	19.6	2	.10
15-19	4	41.1	7	.35
20-24	12	32.5	2	.10
25-29	4	7.8		
over 30	4	7.8	9	.45

In Chart 4 we have listed the ages. The youngest patient was a boy of eleven, who was

CHART 5

MENTALITY OF STERILIZED PATIENTS

(M. W. Barr Classification)

	Males	Females
Low-grade Imbeciles	17	7
Middle-grade Imbeciles	20	6
High-grade Imbeciles	14	7

overdeveloped sexually, and the oldest was a female of 39, who was operated upon at the especial request of her parents.

The age best adapted for the sterilization, we feel, is the early teens, for social and physical reasons. Sex desires are beginning to become aroused at this age and the physical structure of the sex apparatus is better developed and more easily dealt with surgically.

Next we will consider briefly the mentality of our sterilized patients. Generally speaking, it is the higher grades who should be sterilized, for they are the more highly sexed and the more sexually aggressive. We have, however, sterilized a number of lower grades, chiefly for their obscene sex habits. Sterilization has a distinct effect on the habits and for this reason we have advocated it in selective cases of low-grade imbecility. Justification of this will be found in our table of results.

CHART 6

NATIONALITY OF PATIENTS

	Males	Females
Native born	49	18
Foreign born	2	0
Birthplace unknown	0	2

CHART 7

PARENTAGE OF STERILIZED PATIENTS

	Males	Females
Both parents native born	31	11
One parent Foreign born	7	2
Both parents Foreign born	13	4
Unknown	1	3

CHART 8

BIRTHPLACES OF FOREIGN BORN PARENTS

Country	Mothers	Fathers
Austria	2	2
Cuba	1	1
England	3	3
Germany	2	6
Hungary	1	1
Ireland	3	3
Italy	1	1
Russia	5	4
Scotland	0	1
Unknown	3	3

The above three Charts are, we believe, self-explanatory.

CHART 9

EFFECTS OF OPERATION

	Males		Females		Total	
	Number	Per Cent.	Number	Per Cent.	No.	Per
1. Habits improved	38	74.6	9	.45	47	66.3
Unimproved	13	25.4	11	.55	24	33.7
2. Nervous System (Improved)	31	60.7	9	.45	40	56.3
Unimproved	20	29.3	11	.55	31	43.7
3. Mentally improved	20	29.3	6	.30	26	36.8
Unchanged	31	60.7	13	.65	44	61.8
Retrogressive changes			1	.05	1	1.4

In a previous paper[4] we showed the results of sterilization on a smaller number of patients. The above chart shows our results on seventy-one cases over a period of five years. These results are, of course, entirely aside from the fact that the patients have been rendered unable to procreate, which was the chief reason for advocating the measure.

SUMMARY AND CONCLUSIONS

In this paper we have shown that the causes of mental deficiency may be grouped under three general heads, namely:

1. Accidents or injuries at birth.
2. Acute illnesses or severe injuries in early infancy and childhood.
3. Heredity, or causes acting before birth.

We have considered preventive medicine as applied to mental deficiency, using these three general causes as a basis, and it is our contention that a fairly large number of individuals may be prevented from becoming mental deficients and burdens to themselves and the community by:

1. Better and more careful obstetrics.
2. More vigorous application of preventive medicine principles to those frequent diseases of childhood: encephalitis, meningitis, scarlatina, infantile paralysis, whooping cough, diphtheria, chorea, influenza, etc.
3. Better and more rigid marital laws, particularly as to the health and mentality of the applicants for marriage license.
4. Sexual sterilization of the mentally unfit who might propagate their kind.

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I. AUTOPSY STANDARDS.*
II. THE AUTOPSY PERMISSION*

BY IRVING W. PARKHURST, M.D.†

ACCORDING to Long[1], "Antonio Benivieni (about 1440) was the first physician, to our knowledge, to request permission of patients' relatives to perform autopsies in obscure cases." Long states that Marcello Donato, in 1586, forcefully advocated necropsy, as follows: "Let those who interdict the opening of bodies well understand their errors. When the cause of a disease is obscure, in opposing the dissection of a corpse which must soon become the food of worms, they do no good to the inanimate mass and they cause a grave damage to the rest of mankind; for they prevent the physicians from acquiring a knowledge which may afford the means of a great relief eventually to individuals attacked by a similar disease. No less blame is applicable to those physicians who, from laziness or repugnance, love better to remain in the darkness of ignorance than to scrutinize laboriously the truth, not reflecting that by such conduct they render themselves culpable toward God, themselves and society at large."

It is well known that today this country has not yet given the autopsy the place of importance that it assumes in Europe. Apparently it is not so well known that autopsies are relatively few in our medical centers, or, if it is a matter of common knowledge, then the fact seems to be taken for granted and the impression is that little can be done about it. Actually a great deal can be done and it is the purpose of this article to consider various fundamental factors of the autopsy situation which have not been given their proper importance.

REVIEW OF LITERATURE

The first noteworthy investigation into the problem was made in 1913 by a committee of the New York Academy of Medicine[2]. In a comparison of the statistics of postmortems in the large hospitals of the United States with those in hospitals abroad the committee reported a "pitifully poor showing of our hospitals" and that "the absolute and relative number of autop-

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sies performed in American hospitals is extremely small in comparison with the number of autopsies performed in European hospitals. Our research institutions, scientific bodies and medical colleges are greatly hampered in their work at present". In 1917 Winternitz[3] stated: "There is, unfortunately, a great discrepancy between the number and per cent. of autopsies in the larger European hospitals and those in the United States. A circular letter was sent to a number of the hospitals in the United States and replies were received from twenty. It is very surprising indeed that in such splendid hospitals as are represented in this investigation an attempt is not made to obtain an autopsy in every case. It is not sufficient that postmortems are carried on in large numbers in Europe: they must be performed in every country, in every community if the health of the public is to be safeguarded." Burrows[4] wrote, in 1918, "Obtaining of permission for autopsies in many of our hospitals has not been successful." Castelaw[5], in 1918, reported: "It is much to be regretted that in many of our large hospitals where an abundance of materials is available, little or no interest is shown in autopsy work. Our municipal institutions should show at least 50% of their deaths carefully posted; yet in the majority of them the best that is done is from 10 to 15%. In European cities the same class of hospitals show from 90 to 95%. Sturgis[6], in 1921, stated: "It is amazing to note the low ratio of autopsies to the total number of deaths in most hospitals in this country."

FURTHER REPORTS

Richards[7] analyzed the autopsy percentages of two surgical services of St. Luke's Hospital (New York) for a period of 6 months. One service attained 45%, the other 10%. He concluded: "The success of obtaining necropsies depends on the zeal and interest of the various staffs." Bell[8], from his study of remarkably high autopsy percentages in the Minneapolis district, believes that "the most important factor in increasing the number of post mortems is to get the physicians deeply interested". Krumbhaar[9] observed that, at the Philadelphia General Hospital, the autopsy percentage was raised from 10, in 1911, to 51 in 1922. He stated that this was accomplished by "unremitting efforts on the part of the staff". Wooley[10] reported, in 1914, from the Cincinnati General Hospital, an increase in autopsy figures from 18% to 62%. This improvement was attained, as was that at the Philadelphia General Hospital, by unremitting efforts on the part of the staff, and by coöperation with the local undertakers.

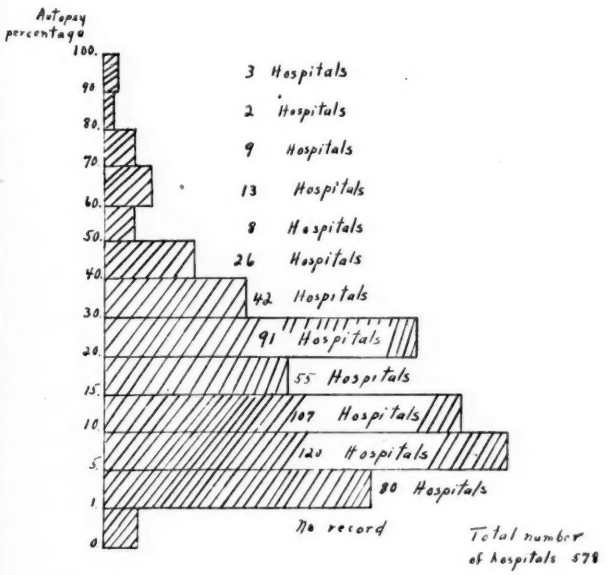
We include with these reports from other localities the results of work done at the Boston City Hospital in an effort to raise the prevailing autopsy percentage. Our conclusions are similar to the preceding opinions, i.e., the improvement was due to unremitting efforts on the part of the staff. To quote Richards[7], more zeal and interest in the matter was displayed and as a result more autopsies were obtained.

The statistics below represent the autopsy figures of the Fifth Surgical (Harvard Teaching Service) for the year 1929. Attention is called to the much higher result for the first six months of 1929 as compared with the latter half of the year. It is evident that more interest was taken in autopsies during the first half of the year.

Month	Number of deaths	Number of autopsies	Autopsy percentage	Autopsy percentage by 6-month periods
Jan.	11	8	72.7	
Feb.	11	9	81.8	
Mar.	7	5	71.4	
Apr.	9	5	55.5	63.3
May	9	5	55.5	
June	8	3	37.5	
July	4	0	0.0	
Aug.	5	1	20.0	
Sept.	8	1	12.5	
Oct.	5	0	0.0	17.9
Nov.	2	1	50.0	
Dec.	15	4	26.6	

AUTOPSY SITUATION AT THE PRESENT TIME

We find a comprehensive view of the situation in the report of the Council of Medical Education and Hospitals of the American Medical Association[11] made in 1927. The significance of this report is presented in graphic form below:



Warwick[12] comments on the findings of the Council as follows: "Most certainly such figures as these justify the investigation of the problem of obtaining more autopsies. With the future of progressive medicine, the training of our young physicians, the compilation of reliable medical statistics and a sound foundation for medical research at stake, the problem is a time-

ly one and deserves the most earnest consideration."

THE AUTOPSY PERMISSION

Of course, the problem of obtaining more autopsies is that of securing more autopsy permissions. We will endeavor to analyze the factors concerned in the autopsy permission, first reviewing the literature upon the subject.

LITERATURE

Bluestone[13] gives his opinion of the importance of the autopsy permission thus: "Upon the solution of this problem depends the future of pathology." He describes it as follows: "The whole affair is an interesting though somewhat trying problem in psychology." He tells us that every case must be regarded as a problem in itself. Various authors have laid down certain rules for us to follow and they have given advice as to the best methods of approach. Warwick advises "sympathizing with relatives in their bereavement". Wilson[14] believes that honesty and frankness in reports to relatives is necessary.

More helpful information is given by Bell[8], who states: "There are no set formulas for securing autopsy permission. The physician who has the confidence of the family is the one most likely to secure consent." Karsner's[15] opinion is similar. "More important than rules is obtaining the confidence and trust of the family."

Let us now restrict our problem to that of obtaining the confidence and trust of the family. Although the literature deals with the intimate relationship between the physician and patient, but little is said concerning the family. Since the physician serves the best interests of both, we will consider that a personal bond exists between the physician and family which is similar in nature to the relationship between the physician and patient.

If we review the nature of the relationship between the physician and patient, we have no better authority than the late Francis Peabody[16]. He stated: "The significance of the intimate personal relationship between the physician and patient cannot be too strongly emphasized." This can also be said of the personal bond between the physician and family. Peabody pointed out that the personal relationship between the physician and patient is apt to disintegrate in hospital practice. He emphasized the difficulties of forming a personal relationship in an impersonal institution, observing that hospitals are prone to deteriorate into dehumanized machines. It is important for us to remember that, just as these impersonal conditions operate to undermine the personal bond between the physician and patient, so do they act upon the relationship between the physician and family. Peabody advised us how to win the patient's confidence: one wishes he had included the family. He stated that we must make a constant and conscious effort to keep in view the background of sickness with the personal contacts involved. In passing it may be observed that the time to make personal contacts with the family is, preferably, before the death of the patient. That in many cases we do not do so is evidence of an impersonal attitude.

Peabody discussed personal relationships and remarked that he was opposed to an overorganization. It is this complicated system of organization which robs the individual physician of responsibility. Now while this may be a very good thing in some matters, it is a very bad condition for the physician's personal influence with the family. And it must be kept in mind that the most important single factor in obtaining the autopsy permission is the personal influence of the physician. Our real need is expressed in Peabody's words, "What we want is less of the system and law that kills and more of the spirit that gives life."

CONCLUSIONS

The autopsy request is of an intensely personal nature.

A personal relationship should be established between the physician and family similar in nature to the personal bond between the physician and patient; it is necessary to make a constant effort to preserve these relationships.

We must, in solving this problem, follow Peabody's example and dispense time, sympathy and understanding more lavishly.

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CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 16441

DYSPNEA AND SWELLING OF THE SCROTUM

MEDICAL DEPARTMENT

A blind man of seventy-five, an American, formerly a sailor, entered July 3 complaining of swelling of the scrotum and shortness of breath of five days' duration. He was eccentric and difficult to interview. His statements were not believed to be entirely reliable.

For thirty-nine years he had been subject to swelling of the left testicle, occurring in connection with colds and other upsets. He attributed it vaguely to some old injury. The testicle usually swelled to the size of a fist, subsiding again in a day or two. A year before admission he had a "stroke",—a feeling of dizziness, an attack of sharp pain and a feeling of compression which started in his throat and went up the right side of his head. After this he was confined to his bed for several days and to the house for several months. For the past five days the testicle had been steadily getting larger. Since June 28 he had had edema of the legs in the evening, disappearing overnight, and had been short of breath on bending over. The shortness of breath had increased to a mild orthopnea.

His family history is not significant.

He had been strong and vigorous until recently. He gave a doubtful history of jaundice thirty or forty years before admission. Forty years before admission he had a chancre treated by small doses of potassium iodide for several years. At the same time he had a short case of gonorrhea. He went totally blind gradually thirty-nine years before admission. He did not know the cause. He had occasional sore throats and hoarseness. He had occasional colicky abdominal pain and considerable gas relieved by saleratus. He sometimes had vertigo.

Clinical examination showed a blind old man with edema of the sclerae, fairly well developed and nourished, moderately dyspneic and cyanotic, in no great distress. The skin of the face and hands was very dark. The chest was somewhat barrel shaped, with marked edema posteriorly. There was a soft tumor three centimeters in diameter not attached to the skin or the underlying tissues just below the right clavicle. Musical râles were heard throughout both chests. The apex impulse of the heart was not seen or felt. By percussion it was 2 centimeters outside the midclavicular line, coinciding with the left border of dullness 11 centimeters to the left of midsternum; right border 2 centimeters to the right, supracardiac dullness 5. A soft systolic murmur was heard at the second right interspace. The pulses and artery walls were normal. Blood pressure 170 systolic, 80 diastolic. An electrocardiogram showed normal rhythm, rate 90, wide QRS in all leads; intraventricular block, right branch type. Abdomen distended and moderately hard, not tympanitic. No fluid wave. Scrotum distended and hard. Legs very much swollen and somewhat reddened.

Urine: amount not recorded, specific gravity 1.026 to 1.030, the slightest possible trace to a very faint trace of albumin at both of two examinations, occasional leukocytes at both, occasional red cells once, hyalin casts once, rare granular casts once. Blood: 5,400 leukocytes, polynuclears 70 per cent, hemoglobin 75 per cent, reds 4,210,000, smear normal. Non-protein nitrogen 46. Stools normal.

Temperature 97.4° to 100.6°. Pulse 82 to 120. Respirations 20 to 44.

A urological consultant found a stricture of the bulbous urethra and attempted to put the patient on constant drainage. The patient, however, pulled out the catheter, which could not be replaced. He passed eight ounces of urine July 5 and not much more July 6. Attempts at catheterization by the Urological Service failed. The bladder was not greatly distended. He was restless and had rapid respiration. He was given morphia with no result. Early in the morning of July 7 examination of the heart and lungs showed no change from the preceding day; a few râles above the fluid. A second dose of morphia quieted him, and he rested well until about fifteen minutes before death, when tracheal râles were noticed. He failed rapidly without other obvious change. That morning he died.

CLINICAL DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

One thing we know at once. The illness did not date from five days before admission. What the cause of the inaccuracy was I do not know. Something had been going on for a long time. This is just the end of it.

A "stroke" of course means to the laity paralysis or coma and to us means a vascular cerebral injury, not necessarily hemorrhage, perhaps softening or thrombosis. I should not think they had much evidence of a stroke. He called it a stroke, but he had no paralysis, no coma. Without those we are never sure of any cerebral vascular lesion.

The edema makes us think that the swollen testicle is just a part of the general dropsy.

We do not think much nowadays of that sort

of treatment for syphilis, potassium iodide.

Summing up the evidence previous to the physical examination:—We have signs of either cardiac or renal disease or both in the presence of this dropsy with dyspnea and mild orthopnea. I suppose that this swollen testicle is a part of that process. As to the cause of his blindness I do not think I can make more than a vague guess. Any man who is blind at this age is likely to have cataract, and thirty-nine years of age is not too young to have it begin. He may have the optic atrophy which goes with tabes. It does not seem probable that he had posterior spinal sclerosis without more symptoms of it in the way of pain, paralysis or bladder trouble than he gives us. It is more likely to be some other cause of blindness that I do not suspect.

A STUDENT: How about syphilitic keratitis?

DR. CABOT: That is much more common in earlier years.

His symptoms were probably due to heart or kidney or both, more probably heart, and because he is seventy-five it is more likely to be a heart case of vascular or degenerative type, the hypertensive type.

NOTES ON THE PHYSICAL EXAMINATION

His chest was barrel shaped, as most chests in people of his age are.

The soft tumor below the right clavicle is probably a fatty tumor of no importance.

The blood pressure shows the same big pulse pressure and high systolic as in another recent case and has the same explanation,—arteriosclerosis. Wide QRS is an indication of poor impulse conduction, very possibly myocarditis. "Intraventricular block, right branch type." We have a certain amount of interference in conduction, which at his age is very apt to rest on a basis of fibrous myocarditis.

"No fluid wave." They do not say anything about percussion. My guess is there is fluid in the belly, but we have no proof. Fluid wave does not mean much. One can get it through fat when there is no fluid there. We want to know whether the area of dullness is in the middle and shifts to the side when the patient is turned on his side.

The urine examination gives the sort of evidence one *can* get with nephritis, but not enough evidence to spell nephritis. We will come back to the question of nephritis later, but the urine itself does not prove it.

The count of red cells is on the border line. We cannot be sure he had any anemia.

The non-protein nitrogen of 46 is also on the border line. It is high, but we often see that with normal kidneys. Normal kidneys except for passive congestion (which we have no reason to doubt) would account for the non-protein nitrogen of 46.

His was a congestive death apparently, moderately sudden. There is no evidence of coronary disease, which in a patient of this sort is very probable because we have reason to suspect syphilitic heart disease or more probably myocarditis.

DIFFERENTIAL DIAGNOSIS

We have much less reliable evidence here than in the last case* because the patient was here only four days and because his own statements were not satisfactory. I should say he died of heart disease and not kidney disease, although I cannot exclude kidney disease. He died of heart disease, with the heart showing nothing in the way of murmurs. The heart should show hypertrophy and dilatation but no valvular lesion. As to the wall of the heart, it probably did show a myocardial lesion, but we have no proof as to whether that was extensive enough to be grossly visible or to be connected with coronary block. This is the kind of case where there may perfectly well have been coronary block, but we have no characteristic symptoms.

With such a normal leukocyte count I do not think there is any reason to say he had bronchopneumonia. It may be there, but we cannot say so.

As to the rest of him, I do not see that we have much. He has a tight stricture, but he has not much distention of the bladder, and we have no evidence of long continued back pressure on the kidneys such as would produce nephritis. The kidney function is not demonstrably bad. He may have vascular nephritis, but there is no positive or convincing evidence of it as in the last case. He has had no symptoms we could call uremic, and he has had very little if any elevation of non-protein nitrogen.

A STUDENT: Had he a hypertrophied prostate?

DR. CABOT: Not if he has had a stricture, and it is practically proved that he had,—I think on the Urological Service they probably could tell. I am supposing that was a urethral stricture.

A STUDENT: He had a feeling of constriction which started in his throat. Could that be a mild anginal attack?

DR. CABOT: I cannot say no. It is not at all typical. It is the sort of complaint you get from pure congestive heart disease; but I cannot say it might not have been connected with coronary block.

A STUDENT: Might not the edema of the scrotum be explained by gumma of the testis?

DR. CABOT: Yes. But I do not think we have any good reason to say so. Gumma is a good diagnosis to fight shy of. It is very rare in late years. It is more common in textbooks than in pathologic findings.

A STUDENT: Might the abdominal pain be due to gastric syphilis?

DR. CABOT: I remember but two cases of gastric syphilis where the pathologist was at all sure of it. I fight shy of the diagnosis of syphilis

*Case 16411, published October 9, 1930.

unless we have tabes or general paralysis of the insane. I never make that diagnosis unless driven to it. He may well have had syphilis. He had very poor treatment or hardly any treatment at all. No mention is made about evidence of syphilis in his blood. For some reason they did not record any Hinton or Wassermann test. In the absence of that and of lesions on his body it is well to say nothing about syphilis.

A STUDENT: Do you think the murmur at the base of the heart is not significant?

DR. CABOT: That is the place where you hear thousands and thousands of murmurs with nothing to show for them post mortem. If you say arteriosclerosis is the cause of it, I have no doubt this man has arteriosclerosis, but I do not think so any more on account of that lesion. For a valve lesion we have to have a great deal more evidence than a murmur. Aneurysm is the thing we think of if he has syphilis. But there again a murmur is a slight thing on which to make a diagnosis of aneurysm.

A STUDENT: He had a tumor just below the right clavicle.

DR. CABOT: If that is aneurysm it is the strangest description of one I have ever seen. While an aneurysm is hard and usually pulsates, this is soft and non-pulsating. I believe this is not aneurysm, although the description does admit the possibility. I believe it is a fatty tumor. "A soft tumor three centimeters in diameter, not attached to the skin or underlying tissue just below the right clavicle." That is a very queer description of an aneurysm, the essential thing being dullness to palpation or x-ray, which they ought to have hurried him to if they suspected it at all. The man who wrote this did not suspect aneurysm, and I do not think we can on the basis of his description.

The best diagnosis is arteriosclerosis, because he is seventy-five years old. I think he has a hypertrophied and dilated heart, especially the left ventricle, because he has a high blood pressure and heart failure symptoms, and I think the high blood pressure and resulting hypertensive heart disease was the cause of death. Next passive congestion of all the organs should show as a result. The kidneys I am uncertain about. We have no proof that he has not kidney disease. If any, it is of the vascular type. My guess is that he has not. I see great possibilities of being wrong, but I will commit myself and say he has no nephritis. The stricture of the urethra does not seem to have produced any of the serious results in back pressure which such strictures often do produce. If he has cystitis or hydronephrosis or any urinary disease such as would result from back pressure we can say we considered them and found no good evidence of them, whatever is found post mortem.

Coming back to the question of coronary disease, I think that is a little more likely than nephritis, not nearly so certain as the main diagnosis of hypertensive heart disease and not so probable as myocarditis. There is nothing calling attention to the coronaries except his attack of pain a year before admission and his sudden death. Many things called chancre are proved not to be that. But his occupation and other facts in the case are not at all against it.

A STUDENT: Is gonorrhea ever a cause of blindness in adults?

DR. CABOT: Not aside from acute known infection. I know a doctor who while caring for a case of gonorrheal ophthalmia caught the disease and had a very extensive gonorrheal scar which nearly made him blind. In the absence of any acute ophthalmia I do not see why we should think of it.

A STUDENT: What about that left testicle?

DR. CABOT: The only thing we have any good evidence for is dropsy. What he had before may have been gonorrhea, with epididymitis. Those two things are reasonably probable. Syphilitic orchitis is perfectly possible, but we have no good evidence of it. I believe dropsy is all that we shall find.

CLINICAL DIAGNOSES

Arteriosclerotic heart disease.
Luetic aortitis?

DR. RICHARD C. CABOT'S DIAGNOSES

Arteriosclerosis.
Arteriosclerotic heart disease, hypertrophy and dilatation of the heart.
Chronic passive congestion of all the organs.
Stricture of the urethra.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Arteriosclerosis.
Hypertrophy and dilatation of the heart.

2. *Secondary or terminal lesions.*

Vascular nephritis (benign type, slight).
Hydrothorax, bilateral.

3. *Historical landmarks.*

Cholelithiasis.
Fibroma of the prostate.

PATHOLOGIC DISCUSSION

BY TRACY B. MALLORY, M.D.

The striking finding at autopsy in this case was the much hypertrophied heart, weighing 680 grams. The other findings are simply those of passive congestion. There was a very considerable amount of fluid in the pleural cavity, 1.5 liters on the right, three-fourths of a liter on the left. Probably that fluid was not present at the time of the physical examination which is recorded. Fluid can certainly collect with great rapidity during the last few hours of life. We sometimes find astonishing amounts at autopsy

which have not shown in x-rays taken less than twenty-four hours before the death of the patient.

The bladder showed a moderate amount of trabeculation. There was a small hard tumor in the prostate which turned out to be fibroma, somewhat unusual. The common thing there is either generalized or focal hyperplasia or the glandular elements or an hypertrophy associated with a chronic inflammatory process. Our examination unfortunately was limited and we cannot say whether there was stricture or not. The testes were normal. I think the swelling of the scrotum was simply edema.

A STUDENT: What was the small tumor below the clavicle?

DR. MALLORY: That was a lipoma.

DR. CABOT: Were the kidneys normal?

DR. MALLORY: Grossly they were practically negative, normal in size, with very slight roughness of the surface with the capsules stripped. Microscopically there were a very few scattered sclerosed glomeruli. The smaller arteries and arterioles show hyaline degeneration. As yet there is no tubular atrophy. Those are the usual findings in a hypertensive case. The kidneys are not normal, but show relatively slight changes.

A STUDENT: Can you explain the heart as idiopathic hypertension?

DR. CABOT: Yes. We have no other disease to which we can attribute it.

DR. MALLORY: We have every reason to believe that he has had hypertension for months or years. The coronary arteries showed sclerosis, calcification, and in one or two spots the lumen was slightly narrowed, but nowhere very markedly so. There were microscopically a few patches of fibrosis of the myocardium.

A STUDENT: Was any explanation found for the blindness?

DR. MALLORY: No. We were not allowed to examine the eyes except externally. There was no sign of cataract.

CASE 16442

AN ABDOMINAL EMERGENCY ASSOCIATED WITH KNOWN CHOLECYSTITIS

MEDICAL AND SURGICAL DEPARTMENTS

PRESENTATION OF CASE

DR. GRANTLEY W. TAYLOR*: A forty year old white man entered the Emergency Ward August 30.

He had previously been in the Outpatient Department, where on July 3 he complained of epigastric pain for one year with no radiation, lasting for about two hours at a time. He had had six or seven attacks. Four or five months previous to admission he had a severe attack followed by jaundice on the second day accompanied by dark urine and clay colored stools. Examination on admission to the Outpatient Department showed no findings except moderate obesity and strongly positive Hinton and Wassermann tests. A Graham test showed diseased gall bladder but no evidence of stones. Films of the genito-urinary tract showed a possible stone at the left ureteral orifice. A pyelogram confirmed the presence of left ureteral calculus, and slight edema around the ureteral orifice was found on cystoscopic examination. They made a diagnosis of cholecystitis, left ureteral stone and tertiary syphilis.

At the time of admission to the Emergency Ward he complained of pain in the abdomen of two days' duration. Beginning two nights previously he had epigastric pain similar to the previous attacks only more severe, not cramplike but steady. This increased in intensity for about an hour and a half and kept him awake throughout the night. There was no vomiting. An enema gave a fair result and some relief from pain. The following day the pain was very severe and shifted from the epigastrium to the lower abdomen. His physician gave him morphia with slight relief. He vomited twice. There was nothing remarkable about the vomitus. On the day of admission the pain was not quite so severe. His bowels had not moved since the enema which he took two days previously. He had had nausea but no further vomiting.

Physical examination disclosed the following abnormal findings. He was an obese man of forty in evident distress. Thoracic breathing. Skin cold and sweating. Chest was of the barrel type. Heart normal in size, sounds faint. Blood pressure 125/95. The pulse rate was not recorded at admission but was 120 the first time it was entered in the record. There was marked tenderness and spasm over the entire abdomen, most marked near the costal margin on both sides and just to the right of the umbilicus. The impression was that much of the spasm was voluntary. There was considerable tenderness and fullness in both flanks, most marked on the left, and tenderness in the pelvis on rectal examination. Liver dullness was absent.

CLINICAL DISCUSSION

DR. TAYLOR: The picture could not be explained on the basis of ureteral calculus. That was just a complicating factor which did give rise to abdominal pain but would not account for the findings in the physical examination. The previous history of gall bladder attacks, one with definite jaundice, and the previous Graham test, which confirmed the diagnosis of gall bladder disease, pointed very definitely in that direction. That would account to a considerable degree for his situation on admission. On the other hand the nature of the attack was very much more severe than the previous ones and was consistent with an acute development in

*Assistant in Surgery.

relation to the chronic cholecystitis and cholelithiasis which he had had. It seemed reasonable to consider acute empyema of the gall bladder in differential diagnosis. Absence of liver dullness raised the question of possible perforation of a peptic ulcer. We could not explain that absence on any other basis, although on operation we found adequate explanation for it.

The leukocyte count was 27,600 in the Emergency Ward. The urine showed a trace of albumin, sediment loaded with hyalin and hyalin granular casts. The temperature was 101.5° by mouth.

Further question was raised as to whether the whole condition might not be explained on a basis of gastric crises, with the previous positive Hinton and Wassermann reactions. A lumbar puncture was done. The findings were absolutely negative in regard to cells, dynamics, chemistry and so forth.

I do not know whether my description, based on the record, conveys an adequate idea of how extremely sick this man appeared to be. In spite of the fact that the blood pressure was 125 systolic and the pulse only 120, and in spite of the fact that we felt that some of his spasm could be explained as voluntary, he seemed to be almost moribund. His skin was cold and clammy, and although he brightened up to answer questions he seemed to be very much more badly off than any of those findings suggested.

Partly on the basis of the extreme prostration, partly because of tenderness in the left flank, we made a diagnosis of acute pancreatitis. It was on the basis of that diagnosis that operation was done.

We opened the abdomen and immediately saw fat necrosis widespread throughout the abdomen. The peritoneum contained a rather large quantity, I should say two or three quarts, of thin bloody fluid which was widespread, as was necrosis, which did not seem localized at any one point more than another. The walls of the visible bowel were markedly edematous, as was also the great omentum. The fluid had rotated the liver backward so that nothing but the anterior edge of it presented at the anterior belly wall, and the percussion note over the edema gave the impression of pseudotympany which blended into the resonance of the chest, so that we had been unable to pick up any liver dullness on physical examination. The gall bladder was tense, with a good deal of fibrin about it and about the region of the common duct. The pancreas was distended, hard and considerably larger than it would normally be. There seemed to be no definite concentration of fat necrosis and no more marked evidence of destruction in the region of the pancreas than elsewhere in the abdomen. We opened the gall bladder and removed a great many stones along with a good deal of moderately grumous bile. We felt satisfied, although we did not open the common duct, that there were no obvious stones in it except at the ampulla, which is what we should have liked to know more about. But in his poor condition we did not want to put him through a longer operation, which common duct exploration would have entailed. We sutured a large rubber drain into the gall bladder. The question arose as to whether we should drain the pancreas. We went over the pancreas thoroughly and found nothing that would require drainage. No areas seemed to be any worse than any others. We drained bile with the idea of relieving the pressure in the biliary tree and perhaps by that also relieving the pressure in the pancreatic tree. A wick was placed in the region of the common duct with the idea of permitting drainage in that area.

He survived about twelve hours after the operation and died with no pronounced change in his condition. The pulse slowly became poorer, with no great acceleration in the rate.

DR. A. V. BOCK: What was the diagnosis in the Outpatient Department?

DR. TAYLOR: Chronic cholecystitis, left ureteral calculus and syphilis. So far as I know he had no treatment.

DR. BOCK: They did not recommend his coming into the hospital?

DR. TAYLOR: No. We commented on it at the time because in a sense we could have prevented pancreatitis by earlier operation for cholecystitis. Acute pancreatitis is an eventuality which may develop in any case of chronic cholecystitis. I cannot believe it a very common type of development in cases of chronic cholecystitis without stones, but it must be a definite possibility always to be borne in mind in cases of gall stones.

DR. BOCK: Was he seen by a surgeon in the Outpatient Department?

DR. TAYLOR: He was seen only in the Medical Outpatient Department, except that he had been to the Urological Department and the diagnosis of ureteral calculus on the left was made there. I am not sure he had been referred to the syphilis clinic. He certainly had had no considerable amount of antiluetic treatment. He had been put on some sort of diet in relation to gall stones.

CLINICAL DIAGNOSES

Acute pancreatitis.
Acute cholecystitis with cholelithiasis.
Syphilis.
Left ureteral calculus.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Acute hemorrhagic pancreatitis.
Cholecystitis and cholelithiasis.

2. *Secondary or terminal lesions.*

Cholecystostomy.
Local peritonitis.
Bronchopneumonia.
Acute tubular nephritis.

Pathologic Discussion

Dr. Tracy B. Mallory: The autopsy showed very little in the way of additional findings. Fat necrosis of course was still present. There was a slight amount of turbid fluid, slightly hemorrhagic, in the peritoneal cavity. The pancreas was estimated to be three times the normal size and on section was found to contain a great many areas of opaque necrosis, some white, some distinctly yellowed, some red and black, in the hemorrhagic portions. We did not find any stone in the common bile duct or at the ampulla. Neither did we find any stone in the kidney.

The lungs were, in gross, negative. Microscopically there was a very early beginning bronchopneumonia, but not enough to be of real significance in the case at all. The one other striking finding was an extreme degree of tubular necrosis in the kidney. The sections resemble those of acute bichloride kidneys.

Dr. Beth Vincent: An important question in this case is whether one should have advised operation for cholecystitis when the diagnosis was first made. Certainly the description of the physical make-up of this patient is suggestive of the type of individual in whom acute pancreatitis is associated with disease of the biliary tract.

Dr. Chester M. Jones: How soon was he operated on after the onset of symptoms?

Dr. Mallory: About forty-eight hours.

Dr. Vincent: These patients usually complain of very severe pain and the pain is often referred to the back. Do you remember whether this man complained of pain in the back?

Dr. Taylor: I think he probably had pain in the back. It is not mentioned in the record, but as I remember it we were very much impressed by the fact that the patient insisted on lying on his side, and stated that his pain was much worse when he lay on his back.

Dr. Vincent: As to operation, it may be advisable to score the pancreatic capsule and drain there. Did you find any soft areas in the capsule?

Dr. Mallory: None soft enough to make drainage seem profitable.

Dr. Vincent: How do you suppose the pancreatic juice escapes and causes fat necrosis?

Dr. Mallory: I do not know exactly. The capsules are pretty well involved in an inflammatory process with fibrinous exudate.

Dr. Vincent: Then the juice comes right through the capsule?

Dr. Mallory: I believe it must.

Dr. Vincent: I recall two cases this summer with persistent pain in the back in which operation showed disease of the pancreas. It seems that pain in the back is often associated with a deep-lying pancreatic lesion and sometimes might give us a clue as to the diagnosis.

Dr. Mallory: We have one other case, an older one, of carcinoma of the tail of the pancreas. About eight months before admission he was treated at another hospital for sacro-iliac disease without relief.

Dr. James H. Means: What do you think the age of the process in the pancreas was? Was there any chronic process there?

Dr. Mallory: There is very little evidence of it in such sections as we have.

Dr. Means: Was it a terminal pancreatitis?

Dr. Mallory: Yes.

The New England
Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY under the jurisdiction of the

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SUBSCRIPTION TERMS: *$6.00 per year in advance, postage paid for the United States, Canada $7.04 per year, $7.56 per year for all foreign countries belonging to the Postal Union.*

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 165 Newbury Street.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The New England Journal of Medicine, 165 Newbury Street, Boston, Mass.

THE DERMATOMES AND THEIR RELATION TO THE SPINAL ROOTS

FOR many years investigators have attempted to define the skin areas, or dermatomes, from which sensory fibers run in over the posterior roots to the spinal cord. These areas are of considerable localizing value in relation to lesions of the spinal cord and their exact limitations are of importance. They were plotted out carefully by Sir Henry Head, who worked on patients suffering from herpes zoster, a disease of the posterior root ganglion. Much experimental work has been done on the same subject by Sir Charles Sherrington and he demonstrated in monkeys a distinct overlapping of the skin fields. Recently Professor Otfrid Foerster of Breslau made further studies and a report of these was given by him at a meeting of the Harvard Medical Society in Boston, October 14*.

For many years he has been cutting posterior roots in his well-known Foerster operation for spastic conditions of the extremities. While so doing, he has taken advantage of the opportunities presented by such human physiological experiments to examine the skin fields in connection with the various posterior roots of the spinal cord. He has used two methods: first, examination of the field of remaining sensibility after cutting a series of the spinal roots, and secondly, a plotting out of the fields of vasomotor dilatation which occur when the cut end of a posterior root is stimulated by the faradic current. Both of these methods have added considerably to our knowledge of the physiology of the pathways of the incoming sensory fibers and he was able to point out in his lecture that there is a distinct overlapping of the dermatomes supplied by adjacent spinal posterior roots; that the tactile area is somewhat larger than the pain area and that there are fibers running in the posterior roots from the spinal cord to the skin areas, which serve as vasomotor controls. In view of his work a new plotting of these skin fields is necessary. In addition he was able to show that stimulation of the anterior or motor root gave changes in the pilomotor and sudorific mechanisms of the skin over a much larger area than the corresponding dermatome of the individual root and he postulates that impulses passing over the anterior roots must be transferred through the sympathetic nervous system rather than directly to the individual dermatomes. By stimulation, at the same time, of a single posterior root he was able to abolish the sympathetic reaction in the individual dermatome, which was only a part of the larger area affected by anterior root stimulation.

These matters are of considerable interest to physiologists, neurologists and neurosurgeons and, moreover, illustrate the value of a physiological approach to clinical problems. Surgeons are constantly offered opportunities for study of physiological reactions in the course of their operative work. Many, unfortunately, miss these opportunities. To Professor Foerster great credit should be given for utilizing his surgical patients to serve as investigative material for the physiology of the spinal cord and its motor and sensory roots.

*See page 892.

HOW TO CALL A DOCTOR

IN the *Brookline, Mass. Health Bulletin* for September, 1930, specific directions appear with respect to the proper construction of messages when the services of a doctor are wanted.

Every practitioner of experience has had occasion to be disturbed when, in response to imperative requests for immediate attention, he has found that there was no occasion for haste, and that both he and other patients have been inconvenienced thereby.

Aside from the advisability of specifying the nature of the illness in a general way in the call, it would be a great comfort to the doctor if his patients could be made to understand that regularity of working hours is as important in

a doctor's life as it is in that of the other professions and although the patient kindly spirit of the doctor leads to frequent self-sacrifice there is no justification for unreasonable demands on his time and strength.

Many doctors suffer rather than complain and do not spend time to instruct their clientele in orderly habits pertaining to demands for service.

Some perhaps impart instruction by not allowing irregular calls to modify the plan for the day's work as arranged in the morning, but the practice of medicine at its best is a service which requires adjustment to irregularities until the time comes when one finds it no longer necessary to adjust oneself to the vagaries of importunate patients.

Since broadcasting by radio is a common method of reaching the public, we respectfully suggest that if and when the Massachusetts Medical Society adopts this method in its educational campaign that the subject "How to Call a Doctor" be included in its program.

Another effective method to meet the needs of the doctor and his patients is to have printed directions relating to this subject on cards which the doctor may use when there seems to be need for this kind of instruction.

The article in the *Brookline Health Bulletin* is timely.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

FLOYD, CLEAVELAND. M.D. Harvard 1903. Chief Examiner, Division of Tuberculosis, Boston Health Department. His subject is: "Early Clinical Symptoms and Physical Signs in Pulmonary Tuberculosis." Page 857. Address: 246 Marlborough Street, Boston.

DAVIDSON, WILLIAM B. M.D. University of Maryland 1917. U. S. A. General Hospital No. 8, Otisville, New York 1919. Consulting Roentgenologist, Lakeville, North Reading and Rutland State Sanatoriums, Massachusetts 1922-1924. Assistant Superintendent, Rutland State Sanatorium, Rutland, Mass., 1924-1929. Now, Private Practice limited to Diseases of the Chest. Physician, Belmont Hospital, Worcester. In charge of Tuberculosis Clinic, Memorial Hospital, Worcester. Physician, Holden Clinic, Holden. Major, Medical Reserve, U. S. Army. His subject is: "Early X-ray—Early Diagnosis." Page 860. Address: 36 Pleasant Street, Worcester, Mass.

DOAN, CHARLES A. B.S., M.D. Johns Hopkins University 1923. Formerly, Thorndike Memorial Laboratory, Boston City Hospital and Rockefeller Institute for Medical Research, New York City. At present: Professor and Director of the Department of Medical and Surgical Research, Ohio State University, Columbus, Ohio. His subject is: "The Relationship of Recent Investigations to Diagnosis and Prognosis in Clinical Tuberculosis." Page 862. Address: Hamilton Hall, Ohio State University, Columbus, Ohio.

KLEINER, SIMON B. Ph.B., M.D. Yale University School of Medicine 1915. Clinical Instructor in Surgery (Proctology), Yale University School of Medicine. Assistant Attending Surgeon, New Haven Hospital and Dispensary. His subject is: "Examination of the Recto-Sigmoidal Region." Page 870. Address: 41 Trumbull Street, New Haven, Connecticut.

BARR, MARTIN W. M.D. University of Pennsylvania 1884. Assistant Physician, Harrisburg, Pennsylvania State Hospital 1884-1885, and Elwyn Training School 1885-1893. Chief Physician, Elwyn Training School 1893-1930. Vice-President, Board of Directors, Elwyn Training School 1925. President, American Association for Study of Feeble-Minded 1897-98. Address: Elwyn, Del. County, Pennsylvania. Associated with him is:

WHITNEY, E. A. M.D. Tufts College Medical School 1922. Resident Physician, New York Hospital 1923-1924. Assistant Physician, Elwyn Training School 1926-1930. Chief Physician, Elwyn Training School 1930-. Member of Pennsylvania State Commission on Mental Hygiene 1929-1930. Address: Elwyn, Del. County, Pennsylvania. Their subject is: "Preventive Medicine and Mental Deficiency." Page 872.

PARKHURST, IRVING W. M.D. Cornell Medical College 1925. Assistant in Surgery, Boston City Hospital. His subject is: "I. Autopsy Standards. II. The Autopsy Permission." Page 876. Address: 520 Commonwealth Avenue, Boston.

MISCELLANY

COMPLIMENTARY DINNER TO DR. F. G. BENEDICT

Dr. Francis Gano Benedict, Director of the Nutrition Laboratory of the Carnegie Institution of Washington, was the guest of honor at a complimentary dinner given October 3 at the Algonquin Club by his associates and colleagues on the occasion of his sixtieth birthday.

Dr. Benedict is a scientist of world wide reputation, an outstanding figure in the highly important field of human nutrition. In the earlier part of his career, he was closely associated with the late Wilbur Olin Atwater, himself the pioneer American worker in this field. Their joint work on alcohol received the recognition of the French Government. Since 1906, Dr. Benedict has been director of the

Nutrition Laboratory of the Carnegie Institution. The work of the institution has not only been of vital importance to the development of certain aspects of physiology but the establishment of normal standards, one of the major activities, has permitted the application of metabolic methods to the study of disease, a most significant development of the later years.

Dr. George H. Parker, Professor of Zoology at Harvard University, presided at the dinner, and the speakers were Dr. Eugene F. DuBois, Medical Director of the Russell Sage Institute of Pathology, and a member of the faculty of the Cornell University Medical College, Dr. Elliott P. Joslin, a member of the faculty of the Harvard Medical School, and Dr. George W. Crile, eminent surgeon and one of the founders of the Cleveland Clinic Foundation.

At the close of the formal addresses Dr. Allan Winter Rowe, Director of Research at the Evans Memorial, presented Dr. Benedict with a handsome volume containing congratulatory letters from distinguished scientists from all parts of the world.

Dr. Benedict responded in his usual happy vein, expressing his thanks for the honor thus accorded him and emphasizing his appreciation of the friendship and good will of his associates and colleagues of which it was an expression.

Among those present were:

Dr. Joseph C. Aub, Dr. and Mrs. Francis G. Benedict, Dr. and Mrs. Thorne M. Carpenter, Dr. Henry A. Christian, Dr. E. J. Cohn, Dr. Reginald Fitz, Dr. and Mrs. Otto Folin, Dr. and Mrs. Alexander Forbes, Dr. and Mrs. G. P. Grabfield, Dr. and Mrs. Harold L. Higgins, Dr. Reid Hunt, Dr. and Mrs. Roy G. Hoskins, Dr. and Mrs. Elliott P. Joslin, Mrs. Elizabeth Benedict Leith, Dr. and Mrs. James H. Means, Dr. and Mrs. George H. Parker, Dr. Frederick H. Pratt, Dr. Joseph H. Pratt, Dr. H. F. Root, Dr. and Mrs. Milton J. Rosenau, Dr. Allan Winter Rowe, Dr. and Mrs. H. Monmouth Smith, Dr. and Mrs. Fritz B. Talbot, Dr. and Mrs. Soma Weiss, Dr. Priscilla White—all of Boston, Mass.

Dr. Frederick M. Allen, Dr. Cameron V. Bailey, Dr. Rufus Cole, Dr. and Mrs. Eugene F. DuBois, Dr. and Mrs. Graham Lusk, Dr. Henry B. Richardson —all of New York City, N. Y.

Dr. John R. Murlin of Rochester, N. Y.

Dr. John F. Fulton, Dr. Lafayette B. Mendel, Dr. Frank P. Underhill—all of New Haven, Conn.

Dr. Elmer V. McCollum of Baltimore, Md.

Mr. J. C. Kendall and Professor E. G. Ritzman of Durham, N. H.

Professor W. G. Cady of Middletown, Conn.

Dr. George W. Crile and Dr. Victor C. Myers of Cleveland, O.

Dr. J. H. Kellogg and Dr. Paul Roth of Battle Creek, Mich.

Dr. Walter M. Boothby of Rochester, Minn.

Dr. Walter R. Miles of Stanford University, Cal.

Professor Otfrid Foerster of Breslau.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS, SEPTEMBER, 1930

The total number of cases of communicable disease reported for September is 3,485 as compared with 2,791 for the corresponding month of last year. The increase is in part attributable to a somewhat greater prevalence of Anterior Poliomyelitis, Measles and Whooping Cough, and in part to the better reporting of Gonorrhea and Syphilis.

Anterior Poliomyelitis, though reported five times as often this month as in the corresponding month of last year, has still failed to reach serious epidemic proportions; 104 cases being the total for the month.

Diphtheria continues low with 166 cases for the month: so far 350 less cases have been reported this year than last: a notable decrease.

Measles continues to be somewhat more prevalent, whooping cough shows, with 517 cases, a very considerable increase over last September's 415.

Meningitis, Pneumonia, Pulmonary Tuberculosis and Scarlet Fever show no remarkable differences.

Typhoid Fever has returned to about the usual seasonal level after the rather high prevalence of August due in large part to the Saxonville outbreak.

Chicken Pox, German Measles, and Mumps show no very significant changes from the usual for the season. Influenza was reported but four times.

RARE DISEASES

Anterior poliomyelitis was reported from Abington, 1; Andover, 1; Avon, 1; Belmont, 1; Beverly, 4; Boston, 17; Brookline, 1; Cambridge, 1; Chelsea, 3; Dedham, 1; Everett, 2; Foxboro, 1; Framingham, 2; Gloucester, 2; Haverhill, 1; Leominster, 4; Lincoln, 1; Lynn, 2; Malden, 2; Marblehead, 1; Medford, 3; Melrose, 3; Methuen, 2; Natick, 2; Needham, 1; New Bedford, 1; Newton, 5; Northbridge, 2; Orleans, 1; Peabody, 1; Quincy, 8; Revere, 4; Salem, 1; Somerville, 4; Stoneham, 1; Tewksbury, 1; Walpole, 1; Waltham, 4; Watertown, 4; Wellesley, 1; Wenham, 1; Weymouth, 1; Wilmington, 1; Woburn, 1; Worcester, 1; total 104.

Dysentery was reported from Worcester, 5.

Encephalitis lethargica was reported from Boston, 2; Worcester, 1; total 3.

Epidemic Cerebrospinal meningitis was reported from Cambridge, 1; Chicopee, 1; Fall River, 1; Hingham, 1; Lawrence, 1; Lynn, 1; Peabody, 1; Uxbridge, 1; total 8.

Malaria was reported from Belmont, 1; Boston, 1; Chelsea, 4; Easton, 1; Newton, 1; Quincy, 1; Worcester, 1; total, 10.

Septic Sore Throat was reported from Boston, 4; Brookline, 1; Cambridge, 1; Fall River, 1; Haverhill, 1; Lowell, 4; Natick, 4; New Bedford, 1; Northampton, 1; Quincy, 1; total, 19.

Tetanus was reported from Boston, 1; Everett, 1; Greenfield, 1; Springfield, 1; Watertown, 1; total, 5.

Trachoma was reported from Boston, 1; Cambridge, 1; Lowell, 1; Somerville, 1; Watertown, 1; total 5.

Trichinosis was reported from Waltham, 2; Whitman, 1; total, 3.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

	Cases in Entire Population				Case Rates per 100,000 Pop.		
	Sept. 1930	Sept. 1929	Prosodemic Index*	Epidemic Index†	Sept. 1930	Sept. 1929	Expected Rate‡
All Causes	3485	2791	—	—	81.8	65.9	—
Anterior Poliomyelitis	104	21	73	1.4	2.4	.5	1.7
Diphtheria	166	222	253	.7	3.9	5.2	5.9
Ep. C. S. Meningitis	8	9	8	1.0	.2	.2	.2
Measles	142	106	274	.5	3.3	2.5	6.4
Pneumonia, Lobar	91	99	117	.8	2.1	2.3	2.7
Scarlet Fever	244	278	444	.6	5.7	6.6	10.4
Tbc. Pulmonary	334	293	429	.8	7.8	6.9	10.1
Typhoid Fever	48	38	58	.8	1.1	.9	1.4
Whooping Cough	517	415	542	.9	12.1	10.0	12.7
Chicken pox	117	127	—	—	2.7	3.0	—
German Measles	27	18	—	—	.6	.4	—
Gonorrhea	648	372	—	—	15.2	8.8	—
Influenza	4	4	—	—	.1	.1	—
Mumps	90	67	—	—	2.1	1.6	—
Syphilis	250	101	—	—	5.9	2.4	—
Tbc. Other Forms	50	55	—	—	1.2	1.3	—

*This Index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the *Boston Medical and Surgical Journal*.

‡Calculated from the Prosodemic Index.

AN EXPERIMENT IN POSTGRADUATE MEDICAL EDUCATION

AN ANNOUNCEMENT ISSUED BY THE CENTRAL MAINE GENERAL HOSPITAL

The Board of Directors and the Medical Staff of the Central Maine General Hospital under the auspices of the Harvard Medical School Courses for Graduates are developing a new plan of postgraduate medical education for districts removed from the larger medical centers. Previously, it has been possible for physicians to obtain graduate instruction only in Graduate Schools associated with the larger Universities. Such instruction is specialized, expensive, and means that the physicians must be absent from their own hospital centers for a considerable period of time. At best, such graduate instruction is available only to a limited number of practicing physicians.

The new plan adopted at the Central Maine General Hospital in Lewiston has as its chief aim the education of the staff members and physicians associated with the hospital. It hopes to accomplish this by conducting teaching clinics at the hospital under the auspices of the Harvard Medical School Courses for Graduates. The Board of Trustees has voted $1000 to put this project into operation during the current year and has approved the following plan:

1. That ten postgraduate clinics be held at the Central Maine General Hospital either monthly or bi-monthly as may be recommended by the graduate teaching service. A plan to place these clinics under the auspices of the Graduate Courses of the Harvard Medical School is approved.
2. That Dr. Soma Weiss, Assistant Professor of Medicine at the Harvard Medical School, head this service and recommend the associates.
3. Objects:
   - A. To elevate the standards of medical practice in the community and to keep these abreast with those of the larger medical centers.
   - B. To provide adequate consulting services to patients, equal to those of large medical centers, which can otherwise be obtained only at a great cost and effort.
   - C. To create a Medical Center about the Central Maine General Hospital for the neighboring districts.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1929 AND SEVEN YEAR AVERAGE

MONTH ENDING OCTOBER 18, 1930

Diseases	1930 Week ending Sept. 27	1930 Week ending Oct. 4	1930 Week ending Oct. 11	1930 Week ending Oct. 18	Average cases reported for week corresponding to Oct. 18 for past seven years	1929 Week ending Sept. 28	1929 Week ending Oct. 5	1929 Week ending Oct. 12	1929 Week ending Oct. 19
Anthrax	—	—	1	—	—	—	—	—	—
Cerebrospinal Meningitis	1	2	—	—	1	—	—	—	—
Chickenpox	8	10	14	15	33	23	27	23	54
Diphtheria	7	7	5	16	32	10	14	15	36
Dysentery Amoebic	—	1	—	—	—	—	—	—	—
Dysentery Bacillary	—	—	—	2	—	—	—	—	—
Encephalitis Epid.	1	—	—	1	—	—	—	3	—
German Measles	—	—	3	2	2	—	—	2	1
Influenza	3	8	2	2	1	1	2	34	4
Malaria	—	—	—	—	—	1	1	—	—
Measles	4	2	9	8	21	6	4	—	3
Mumps	6	1	6	7	6	5	12	11	15
Paratyphoid Fever	—	—	—	1	—	4	6	2	1
Pneumonia (Broncho)*	13	14	16	10	17	11	11	7	15
Pneumonia (Lobar)	16	12	14	20	18	7	13	12	16
Poliomyelitis	5	10	10	10	3	—	1	—	2
Scarlet Fever	14	16	16	15	33	23	14	22	24
Septic Sore Throat	—	1	3	—	1	—	1	2	3
Trichinosis	—	—	—	—	—	—	1	—	—
Tuberculosis (Pul.)	28	35	24	32	26	34	33	18	18
Tuberculosis (O. F.)	—	4	—	2	—	—	1	1	1
Typhoid Fever	2	4	11	7	7	1	4	2	4
Typhus Fever	—	1	—	—	—	—	—	—	—
Undulant Fever†	—	—	—	1	—	1	—	—	—
Whooping Cough	17	43	49	37	40	15	25	24	37
Gonorrhea	24	38	23	26	26	16	30	26	37
Syphilis	34	79	59	20	25	37	30	19	37

Remarks: No cases of Asiatic cholera, glanders, plague and yellow fever during the past seven years.

*Made reportable January 1, 1925.
†Made reportable July 1, 1928.

AN HONOR TO DR. HARVEY CUSHING

The medical profession will be especially pleased to note the award of the Montclair Yale Bowl for 1930 to Dr. Harvey Cushing by the Yale Club of Montclair, New Jersey. The presentation will be made December 6 at the tenth annual Barn Party following a custom of the past decade which has recognized eminent graduates of Yale at intervals. In naming Dr. Cushing, the Committee stated:

"We feel that Dr. Cushing is eminently entitled to receive this award which each year goes to a Yale alumnus who, by his own efforts, has made his "Y" in life. Dr. Cushing is recognized in medical circles as one of the most outstanding of modern surgeons. He graduated from Yale in 1891 and has received two honorary Yale degrees since that time, one in 1913 and one in 1919. He is chief surgeon at the Peter Bent Brigham Hospital, Boston, and is the author of many books, including the "Life of Sir William Osler," which won him the Pulitzer prize.

"We have further selected Dr. Cushing as the recipient of the award this year because we have felt that it would be fitting to bestow the bowl upon a Yale alumnus who has made his "Y" in scientific and professional fields. The award has not previously gone to any professional man or scientist, although Yale alumni include many distinguished leaders in these walks of life."

It is gratifying to know that the achievements of an eminent surgeon are recognized by a group which is not distinctly medical in its membership.

CORRESPONDENCE

A TRIBUTE TO DR. R. B. ROOT

Mr. Editor:

The announcement in the October 16 issue of the *Journal*, telling of the recent death of Dr. R. B. Root of Georgetown, recalls a short but delightful acquaintance I had with Dr. Root in the summer of 1927. The occasion of our first meeting was to discuss the care of a nurse suffering with metastatic carcinoma. Under my care she had been failing for several months, but she gained weight and improved in every way during that summer under Dr. Root's ministrations. With a twinkle in his eye, he flatly declined to tell me the secret of his success. My subsequent visits were made quite as much to Dr. Root as to the patient.

Dr. Root's father, Dr. Martin Root, graduated from the Vermont Academy of Medicine in Castleton, Vermont, in 1825. He commenced practice in Georgetown in 1827. He was secretary and treasurer of the Essex North Medical Society for thirty-five years, and upon retirement was given an honorarium of fifty dollars. He practiced over forty years.

Dr. R. B. Root, of whom I am writing, graduated from Harvard Medical School in 1867, having completed the three years' course there two months before his twenty-first birthday. He was given to understand, upon graduation, that he knew all there was to know about medicine and surgery, and although he had never seen a delivery his professors impressed him with the thoroughness of his tutelage. Beginning practice with his father, he said he began to learn something after all. Indications were always for one of two remedies, and in their daily calls when his father asked him, "and what would you give to this patient?" he soon learned that a rising inflection with the question meant an emetic, while a falling inflection meant a cathartic.

Dr. Henry J. Bigelow had taught him that it was not necessary to change surgical dressings until the tenth day, when the dressings must be removed so that the pus might escape. Dr. Root faithfully followed these instructions with his first case of trauma, but on the tenth day he was alarmed to find, when the dressing was changed, that the wound had healed by first intention! He later learned not to let that sort of thing frighten him.

He vividly recalled Dr. Bigelow in a blue frock coat stiffened with dried blood and pus. He could quote verbatim from Oliver Wendell Holmes' anatomy lectures, and told me graphically of the demonstration of "the pelvic arch, under which humanity is ushered into the world". He said that Dr. Holmes would sometimes be rendered quite breathless by these oratorical efforts, and would follow them by wheezing and coughing.

Dr. Root took care of a patient with acute and typical lobar pneumonia at the age of 102. There was a classical crisis and complete recovery. He said thereafter he never worried about pneumonia in patients over 100, for so far as he knew they always got well. He did continue to be uneasy when younger people had the disease, however. He was somewhat familiar with the reports of serum treatment for pneumonia, but had never used it himself. The only change made during his sixty years' experience in the treatment of pneumonia was a decrease in the number of venesections performed. He was not at all sure that this was not a mistake, and had great respect for venesection for the relief of other conditions.

His midwifery experience was large. In the early years of practice he did not own forceps. Only one doctor in a rather large community did at that time, but the others were always free to borrow them when they wished. One day he thought he needed them and went to his colleague, a distant neighbor, who began to search his house for them. After his colleague confessed that he hadn't seen them for forty years, Dr. Root decided that "he guessed he didn't need them after all". On one of the coldest nights he remembered he was called to a woman with a ruptured uterus. He reached in, felt the liver and spleen, and finally located a leg and delivered a baby weighing fifteen pounds. As soon as the excitement abated a little he explained the situation to the family and a priest was sent for. He never forgave that priest for upbraiding him in church the following Sunday, because he had anaesthetized the patient and thus prevented the full administration of the sacraments.

After delivering a baby, Dr. Root once handed it over to a person whom he thought to be, and called, the grandmother. The woman straightened with a little pride and told him that she was not the grandmother, but the great-grandmother of the newborn child. Dr. Root appropriately complimented her and continued with his work. When things were getting nicely cared for the great-grandmother came to him and asked him if there was anything more she might do, because, if there was not, "she thought she ought to go home and get her mother's supper".

In his first year of practice Dr. Root amputated a leg at the thigh. It didn't seem to him a very difficult operation at the time, and he explained that both surgery and midwifery were much more simple and easy before the days of asepsis. The "invention of appendicitis" also complicated the doctor's daily work. He was sure that neurosis had become a distinctly more prevalent complaint in the past half century, but that it occurred and was readily recognized by all the older physicians.

I am relating these incidents from notes taken in 1927, and they are recorded here substantially as they were told to me. Dr. Root's life is worthy of enlargement into something more than a piece of correspondence, and I regret that my acquaintance with him was so limited that I cannot attempt it. He was a charming gentleman, had a very subtle sense of humor, and must have been an untold comfort in his community. When I knew him he had already completed the century of practice begun by his father in 1827. The present scion, Dr. Raymond R. Root, now carries on the heritage. Georgetown is to be congratulated.

Very truly yours,

DWIGHT O'HARA.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.
October 24, 1930.

Dear Doctor:

In addition to the articles enumerated in our letter of September 26 the following have been accepted:

Lederle Laboratories, Inc.
Diphtheria Toxoid

Maltine Company
Maltine with Cod Liver Oil and Iron Iodide

The following articles have been exempted and included with the List of Exempted Medicinal Articles (New and Nonofficial Remedies, 1930, p. 477):

E. R. Squibb & Sons
Tablets Digitalis Leaves—Squibb 1 Cat Unit (approximately 1½ grains)
Tablets Digitalis—Squibb 1 Grain (10 minims U. S. P. tincture)

Yours truly,
W. A. PUCKNER, *Secretary*,
Council on Pharmacy and Chemistry.

RECENT DEATHS

HOBAN—DR. JAMES JOHN HOBAN, a practitioner of Lowell since 1908, died in that city, September 6, 1930, aged 47.

Dr. Hoban was a graduate of Jefferson Medical College of Philadelphia in 1907. He devoted himself largely to surgery. He was a Fellow of the American Medical Association and of the Massachusetts Medical Society.

NEILL—DR. MATHER HUMPHREY NEILL, Surgeon, United States Public Health Service, recently stationed at San Diego, California, died at Pittsfield, Massachusetts, October 26, 1930, at the age of 48. He was a native of Westfield and a graduate of Amherst College in the class of 1905 and of Harvard Medical School in 1909, receiving the degree of *cum laude* on graduation. From 1911 to 1914 he was a Fellow of the Massachusetts Medical Society and at the time of his death he was a Fellow of the American Medical Association.

ROY—DR. AURELE ROY, of Brockton, died in that city October 25, 1930, aged 51.

He was a native of Montreal and a graduate of the University of Montreal Medical Faculty in 1905. During the World War Dr. Roy served as captain in the Medical Corps of the Canadian Army. He settled in Brockton and joined the Massachusetts Medical Society in 1927. He practiced laryngology and rhinology.

Dr. Roy is survived by his widow, a son and a daughter.

NEWS ITEMS

$115,000 FOR MEDICAL RESEARCH AT HARVARD—According to published reports Harvard will eventually receive $115,000 for medical research from the estate of William A. Purrington, a lawyer who died in 1926.

HARVARD MEDICAL SCHOOL SCHOLARSHIP AWARDS—The following scholarship awards have been made at the Harvard Medical School for the year 1930-31:

Name of Scholarship — Awarded to

Edward M. Barringer, No. 1—Arthur Joseph Geiger.

Edward M. Barringer, No. 2—Richard Sylvester Hawkes.

Gordon Bartlett—Robert Alvan MacCready.

Gordon Bartlett—William Harris Browning, Jr.

Matthew and Mary E. Bartlett—John Wallace Zeller.

Lucius F. Billings—Jesse Silsby Parker.

Orlando W. Doe—George Rodgers Dunlop.

Joseph Eveleth, No. 1—Prentiss Lum Hyder.

Joseph Eveleth, No. 2—George Stanley Baker.

Joseph Eveleth, No. 3—John Vernon Cantlon.

Horace Putnam Farnham, No. 1—Edwin Adams Harper.

Horace Putnam Farnham, No. 2—Wesley William Spink.

Hilton, No. 1—Willard Burns Rew.

Hilton, No. 2—Claude Emerson Welch.

William Otis Johnson—Herbert George Finn.

Claudius M. Jones—Merritt Burnham Low.

Alfred Hosmer Linder—Edward Budnitz.

Joseph Pearson Oliver — Carlton Remsberg Souders.

Charles B. Porter — Arnold Frederick Ernest Settlage.

Flavius Searle—James Hervi Sterner.

Charles Pratt Strong—Leo Walzer.

Isaac Sweetser—Robert Ory Wilson.

John Thompson Taylor—Alfred Leslie Duncombe.

Dr. Charles Walker, No. 1—Rolf Lium.

Helen L. Walker, No. 2—Kenneth Barrie Olson.

Anna G. Walker, No. 3—Hollis Steadman Ingraham.

Leslie W. Walker, No. 4—Richard Edward Alt.

Abraham A. Watson—William Graham Thompson.

Edward Wigglesworth—Edward William Bulley.

Cotting Gift—Robert Emmett Jennings.

John Foster Fund—Harold Francis Laroe.

James Ewing Mears—Carl Waldemar Walter.

APPOINTMENT OF DR. BERK—Dr. Arthur Berk of 270 Commonwealth Avenue has been appointed Consulting Neurologist to the Reformatory for Women, Sharon, Mass.

NOTICES

ANNOUNCEMENT

Dr. Horace D. Arnold will resume practice November 1, 1930. His office will be at his home, 1559 Beacon Street, Brookline (instead of 520 Commonwealth Avenue). Telephone: Aspinwall 9021.

Dr. Clifton B. Leech announces the opening of an office at 211 Angell Street, Providence, Rhode Island.

UNITED STATES CIVIL SERVICE EXAMINATION

Senior Pathologist (Barberry Eradication), $4,600 to $5,400 a Year

Applications must be on file with the U. S. Civil Service Commission at Washington, D. C., not later than November 19, 1930.

The United States Civil Service Commission announces an open competitive examination for the position named above. Vacancies in the Bureau of Plant Industry, Department of Agriculture, for duty in Washington, D. C., or in the field, and in positions requiring similar qualifications, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Applications.—Form 2600, which is required, may be secured from the following (the title of the examination desired should be stated): The U. S. Civil Service Commission, Washington, D. C.; the U. S. Civil Service District Manager, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La.; Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Calif., Denver, Colo.; Old Customhouse, St. Louis, Mo.; the Secretary of the U. S. Civil Service Board, Federal Building, Honolulu, Hawaii; Administration Building, Balboa Heights, Canal Zone; or the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

REPORTS AND NOTICES OF MEETINGS

HARVARD MEDICAL SOCIETY

The Harvard Medical Society held its first meeting of the school year in the amphitheater of the Peter Bent Brigham Hospital, Tuesday evening, October 14, at eight-fifteen o'clock. Dr. Harvey Cushing presided.

The first case was presented by Dr. Doty of the medical service. The patient, a fifty-six year old, white, American housewife was admitted on September 29 complaining of weakness, inability to stand and to grasp small objects, lasting four weeks. For three months previous to admission she had been weak and tired following a cold. About the middle of August she began to notice tingling and numbness in her fingers with slight leg weakness. She noticed that she was inclined to stumble. Four weeks before admission she sprained her ankle but recovery soon followed. The weakness in her arms and legs increased. There were shooting pains radiating from the antecubital space to her fingers and from the popliteal space to her feet. Her doctor found she had an anemia and advised admission to the hospital. Physical examination showed a sallow complexion, thin extremities with wasting of the interossei muscles and extensor weakness of the hands and feet. Deep reflexes of the arms and legs were active, but the abdominal reflexes were absent. The vibration sense was normal. There was marked hyperaesthesia, by pin prick, of the stocking and glove type. No tongue changes were present but there was some difficulty in articulation. Laboratory examination showed an absence of free hydrochloric acid in the stomach; other findings were normal.

She was presented as a problem in diagnosis. The hospital staff had considered the case as one of multiple sclerosis, combined systemic disease or peripheral neuritis. The diagnosis of peripheral neuritis of an unknown etiology was considered the most likely. This was substantiated by discussion.

Dr. Light of the surgical service presented the second case, which was that of transverse fracture of both femora just below the greater trochanters, in a painter following a sixty foot fall. The case was presented because of two interesting points relative to treatment.

Two days after the removal of traction the patient suddenly developed a temperature of 103°, became drowsy and irrational. The temperature quickly dropped and the mental condition is slowly improving. This incident was considered to be due to a fat embolism to the brain. There has also been considerable delay in healing of both fractures. The question was raised as to whether this was the result of lead poisoning which the patient had contracted many years ago. It was concluded that in the absence of other signs or symptoms that this was improbable.

The paper of the evening was given by Professor Otfrid Foerster, Professor of Neurology, University of Breslau. The subject of the paper was Dermatomes in Man; a Contribution to the Physiology of the Functions of the Spinal Roots.

In his opening remarks Professor Foerster emphasized the fact that neurology must not be too dogmatic. It must be subject to revision and be based on facts alone. The fundamentals are well established along main lines but these must be followed up to verify or to correct errors.

Professor Foerster's study was undertaken in an attempt to outline more accurately the cutaneous distribution of those forming the posterior roots of the spinal cord and to obtain practical information for use in posterior spinal root section for the relief of pain. This study can be made by two methods. The anatomical method consists of following out the posterior root fibers to their cutaneous distribu-

tion. This method has failed to show the complete extent of the dermatomes. The second method Professor Foerster called the isolation method and consists of a division of a nerve root followed by a localization of the area of skin anaesthesia. Others have studied the dermatomes by postmortem examination of the spinal cord following herpetic eruptions.

Professor Foerster's work is based upon the isolation method. He has been able by the study of operative cases to outline accurately all the lumbar, sacral and cervical dermatomes in man. These were demonstrated by lantern slides made by the speaker during his studies. He showed that each dorsal root has a well defined cutaneous distribution and that by section of a single root one can expect to obtain anaesthesia in a definite, cutaneous area. However he also showed that the dermatomes overlap in man just as they do in animals. It was brought out by Professor Foerster that by the isolation method he found that the area of analgesia, produced by the division of a dorsal root, was consistently larger than the area of anaesthesia.

The isolation method was supplemented by a study of the results obtained when the distal end of the divided posterior root was stimulated with the faradic current. The posterior roots contain vasodilator fibers and consequently it was found that faradic stimulation of these roots produced a well defined area of hyperemia. These areas are similar to, but not the same as, those obtained by the previous study. Professor Foerster believes they are more nearly like the areas obtained by studying herpetic eruptions. Similar experiments were carried out upon the anterior roots of the spinal cord. Following faradic stimulation sweating was brought about in a large area. The sweating area was much larger than the area of hyperemia affected when the corresponding dorsal root was stimulated. The simultaneous stimulation of both the anterior and posterior roots showed an absence of sweating in the dorsal dermatome while the remainder of the area was unaffected. From this experiment Professor Foerster concludes that the dorsal roots carry fibers which inhibit the cutaneous secretion.

He said further that not all the sensory fibers are destroyed when the posterior spinal roots are divided. In a search for other sensory paths, it was found that both the sympathetic ganglia and periarterial sympathetic fibers contain sensory pathways. The manner in which these sympathetic sensory fibers enter the cord has not been definitely shown. It is probable that some enter through the anterior spinal roots. In support of this theory Professor Foerster stated that cells of exactly similar type had been demonstrated in the anterior spinal roots and the sympathetic ganglia. This is not sufficient evidence however to advocate division of the anterior root. It does indicate that pain following division of the posterior root is probably not of psychogenic origin but is due to sympathetic sensory fibers contained in the anterior root.

In conclusion Professor Foerster cited the results obtained by him, following dorsal root division in cases of congenital spastic paraplegia. These little patients, unable to move their legs or to walk, showed remarkable improvement in the use of their limbs. He also pointed out that posterior root division is the only procedure that may give relief in cases of flexor paralysis, encountered in multiple sclerosis. Posterior root division in cases of gastric crises has given variable result. Some cases have been benefited but in any case it is necessary to divide a large number of roots.

PLYMOUTH DISTRICT MEDICAL SOCIETY

The first autumn meeting of the Plymouth District Medical Society was held at the Commercial Club in Brockton at 11 o'clock on October 16, 1930. Dr. Frederick W. Murdock, president of the Plymouth District Society presided. Before the meeting Dr. Murdock held a short reception. Our president has been recently married and had just returned from a trip to California and the Canadian Rockies. Dr. George A. Moore, secretary of the society read the records of the last regular meeting. There were present a number of newly elected members from Easton and Middleboro and they received a very hearty welcome. The legislative committee that had been appointed the year before by Ex-President Dr. Thomas H. McCarthy, was re-appointed by President Murdock. Dr. Murdock then told the society that he intended to set aside one hour, each meeting, for the purpose of hearing reports and discussions of interesting cases. Dr. Peirce H. Leavitt reported a case of fracture of the acetabulum and ischium. This was caused by an automobile accident. While the patient was recovering, an internal condition was suspected and an operation performed. This woman made a very fine recovery. The case was discussed by Dr. Charles Hammond of Hanover, and Dr. Charles G. Miles of Brockton. Dr. William G. Walker, internist of the Brockton Hospital, reported a case of pericarditis with effusion. This patient recovered. The case was discussed by Dr. John J. Condrick. Dr. Charles G. Miles reported a very interesting case of pyloric spasm of the stomach, caused by an automobile accident. Dr. Moore reported two cases of intrathoracic pressure. One was caused by hemorrhage from the internal mammary artery which was cut by a knife and the blood collecting in the thorax. The other was caused by a malignant growth which proved to be a cancer of the left lung. After the rupture of the artery the lung filled with blood in 48 hours. Aspiration was done but the patient finally died, and it was found afterward that she had a cancer. Dr. Moore also reported a case of pericarditis with effusion with an uninterrupted recovery. Dr. Frederick W. Murdock, president of the Plymouth District Society reported two cases of tri-facial neuralgia. Dr. Murdock introduced the patients to the members present, and described in detail just what had been done to improve conditions. The first followed an injury of the infraorbital nerve. The other case was an injury of the inframental nerve. These cases

were discussed by Dr. John F. Callahan. This hour of reporting and discussing cases was very interesting and instructive. Dr. Murdock then introduced Dr. Richard H. Miller, one of the surgeons of the Massachusetts General Hospital of Boston, Massachusetts, who took for his subject, "Emergencies in General Surgery." Dr. Miller discussed the surgery of felons, infected tendon sheaths, infected hands and feet, and osteomyelitis due to delay in treatment. Infections of the neck and the upper lip complicated by a carbuncle and other infections, purpura hemorrhagica, surgical removal of the spleen, and the problems of abdominal surgery including appendectomies. While discussing these operations, Dr. Miller stated that it seemed to be the tendency of the times, to wait a considerable time before recommending operations for appendicitis. He could not recommend too strongly the removal of the appendix immediately when there were any indications of the disease. He then took up the operations for acute infections of the Fallopian tubes. In these cases, he stated, it was not well to operate until after study of the symptoms seemed to indicate that it was necessary to act at once. In young girls and women without children, he stated that it was not good surgery to remove the tubes. Dr. Miller then took up gall bladder operations. He went into this form of operation very thoroughly and explained in detail various forms of operation. He discussed peritonitis following perforated ulcer of the stomach in trauma in the abdomen and peritoneal hemorrhage which he stated was often hard to diagnose. He also discussed delayed rupture of the spleen and spoke of two cases. One of the cases was that of a Harvard football player, in which case the spleen was removed and fine recovery followed. The other case was of a woman who also made a very good recovery. Intestinal obstruction, mechanical and malignant, exploratory laparotomy operations, fracture of the head, compound fractures of the extremities, transfusions and burns were then discussed. In the treatment of burns he stated that tannic acid 2½% was of great value. After Dr. Miller's address, a question period was held and various members of the society discussed the various points that were brought out. It was a very enthusiastic meeting and Dr. Miller was given a rousing vote of thanks. After the discussion the society adjourned to the dining hall where a fine dinner was served, which included lobster salad. There were over 35 physicians present from Brockton and surrounding towns.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

The autumn meeting of this District Society was held at the Weston Golf Club on October 16, 1930. For an hour and three-quarters the Fellows of this District attended the "Post Graduate Course" in Obstetrics given by the Section of Obstetrics and Gynecology of the Massachusetts Medical Society.

The subject was "Symposium on uterine bleeding" illustrated with lantern slides and moving pictures.

The speakers were: Dr. Alonzo K. Paine, Dr. Fred L. Good, Dr. Charles E. Mongan, Dr. Samuel R. Meaker, Dr. Fred J. Lynch.

The meeting was one of the most instructive held by the Society. The words, "My regret is that I am not starting the practise of medicine now with such fine offerings and possibilities," spoken by a Fellow who has been in practise for over thirty years expressed the sentiment of the one hundred and fifty members who were present.

Dr. Charles E. Mongan outlined the growth and purposes of the present Obstetrical and Gynecological Section; Dr. Fred J. Lynch gave an illustrated talk on prenatal bleeding; Dr. Samuel R. Meaker explained the various reasons for uterine bleeding—(with illustrations); Dr. Fred L. Good discussed the management of the various stages of labor stressing especially the value of the use of the episiotomy operation; Dr. Alonzo K. Paine to whom the meeting was turned over by Dr. Van Nüys, President, acted as chairman and spoke during the moving picture, which showed the management of postpartum hemorrhage, thus clarifying the details.

A rising vote of thanks was given the members of the section and an invitation extended to present new material when available.

Following the symposium a banquet was held. Many Fellows remained to play golf.

ALEXANDER A. LEVI, *Secretary.*

THE MASSACHUSETTS CENTRAL HEALTH COUNCIL

The fall meeting of the Massachusetts Central Health Council was held at the Twentieth Century Club on Thursday afternoon, October twenty-third, at four o'clock. Dr. LeRoy M. S. Miner, dean of the Harvard Dental School and president of the Council presided at the meeting.

The Council is composed of fifteen official and voluntary organizations, with state wide jurisdiction. These organizations are interested in the promotion of public health. At present the members are watching the developments of the White House Conference at Washington for a nation wide study of the child hygiene and welfare problem. Mrs. Walter McNab Miller, associate director of the American Child Health Association, addressed the meeting and emphasized the necessity for a state wide organization, working harmoniously, to carry out any child welfare program adequately and to promote the greatest possible benefit of the results of the White House Conference. The final objectives of this are to set forth the various recommendations based upon the analysis by experts of reports obtained from doctors and public health organizations all over the United States. The dissemination and utilization of this knowledge must be expected by the consolidated efforts of the health organizations of each state. Twenty-three states now have such organizations. Mrs. Miller said further that we are just beginning to realize the value of human beings and also the right of every child to mental, social and physical opportunities. It is a step towards the golden age, a goal, which can only be reached by hard work and tireless efforts.

The findings of the White House Conference are to establish standards for the further advancement of Child Welfare and Massachusetts must be ready with a machine like organization to carry on.

Dr. George H. Bigelow, State Commissioner of Public Health, a delegate to the Conference, said the results of the conference were astonishing in that there had been a nation wide realization of the importance of the health and protection of the child. The entire study has been based upon facts and has been handled extremely carefully.

The responsibility of the Council now is to anticipate the recommendations and to determine just what resources it has or does not have for the carrying out of a state wide program.

At the close of the meeting a motion was made, which was unanimously passed, proposing first, that the Council accept the responsibility for finding the best method for disseminating the findings of the White House Conference, second, that a special meeting of the Administrative Board be called to consider this question and third that the Conference be notified of the willingness of the Council to aid in the national program.

Mr. J. H. DeSaran, representative of the government of Ceylon, said he was particularly impressed with the work for children done in this country and would recommend a similar plan for his country.

THE HAMPDEN DISTRICT MEDICAL SOCIETY

The regular meeting of the Hampden District Medical Society was held October 21, 1930, at 4:15 p. m. at the Springfield Academy of Medicine.

The papers:—

"Injection treatment of varicose veins," F. H. Baehr and F. K. Dutton.

"Radium, its physical properties as applied in medicine," H. W. Van Allen.

Discussion was held and adjournment with supper at the expense of the society followed at 6 p. m.

The censors will meet at the Academy of Medicine on November 6, at 4 p. m.

A MEMORIAL DINNER OF THE BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY

A memorial dinner constituting the 387th meeting of the Boston Society of Psychiatry and Neurology was held at the Longwood Cricket Club on October 16, 1930, at 7 P. M. Thirty members were present. After dinner the president, Dr. E. W. Taylor, took the chair and after a few introductory remarks urging a broadening of the club membership to include physicians in any branch of medicine who had neurological interests, he called on Dr. Henry Viets. Dr. Viets had prepared an account of the history of the Society from its founding to the present day, which will be published in full in the *New England Journal of Medicine*. Dr. Macfie Campbell was next called upon and gave a brief account of the history of the development of psychiatry during the last half century and enlarging further on Dr. Taylor's suggestions for the future of the Society. Dr. Harvey Cushing was also called upon and after touching on several topics, read a most interesting account of a recent visit to Sir Henry Head.

The final event of the evening was a pageant of the development of psychiatry in which Dr. Stanley Cobb, Dr. MacPherson, Dr. Munro, Dr. Ayer and Dr. Gregg, took leading parts, and Dr. Solomon, Dr. Hodgson, Dr. Burley, Dr. C. A. McDonald, Dr. Caner and Dr. Cushing, also participated. The meeting adjourned about eleven o'clock with high hopes for the future of the Society.

TRACY J. PUTNAM, *Secretary.*

THE ANNUAL MEETING OF THE NEW ENGLAND OBSTETRICAL AND GYNECOLOGICAL SOCIETY

The second clinical meeting of the New England Obstetrical and Gynecological Society was held at Providence, Rhode Island, April 30, 1930.

There was an operative clinic at the Rhode Island Hospital in the morning by Dr. Noyes and the gynecological staff. Drs. Pitts and Waterman demonstrated the technique of the treatment of carcinoma of the cervix by use of radium needles. Dr. Waterman summarized the results of radium treatment of carcinoma of the cervix in ninety-two cases treated from 1921 to 1924 at the hospital, of which eighty-eight were traced for a five year period with a cure rate of 17.4% for all cases seen and of 18.2% for cases traced. These cases were all treated with radium element contained in tubes and steel needles. Four tables of results were shown. The first table showed the results for each year and for the total of ninety-two cases. In the second table the results were arranged as to age groups and showed the larger number of cases occurring in the 5th and 6th decades with the interesting fact, that the twenty-seven cases occurring in the 5th decade showed a cure rate of 29.6% as against a 15.8% rate for nineteen cases in the 4th decade and a 12% cure rate for twenty-five cases in the 6th decade, in spite of the fact that the percentage of favorable cases in the 5th decade was considerably lower than either the 4th or the 6th. In the third table the cases were arranged according to clinical groups and showed a cure rate of 57.9% for groups one and two or the operable groups with 11.4% for group three and only 2.5% for the hopelessly advanced group. Attention was again called in light of these figures to the necessity of getting cases early. In table four a comparative chart was shown of results at several different clinics. A plea for standardization in reporting of cases was made.

Dr. Pitts presented two cases of diverticulae of the urethra in the female illustrated by lantern slides of sections of the floor of the urethra in the female at different stages of development and diagrammatic slides representative of the urethra in one of the cases reported showing two stones which were present.

Dr. Clark exhibited pathological specimens which were of gynecological and obstetrical interest. He also read a paper on benign tumors (pelvic) con-

taining endometrial tissue and reviewed theories as to their histogenesis, citing von Recklinghausen's belief that they arise from embryonic remnants of the Wolffian bodies, Cullen's idea that they originate as direct extension from the endometrium, Sampson's theory of endometrial implantation and transplantation and the serosal theory of Ivanoff and Meyer. He concluded that no one theory adequately explains all these tumors. The serosal theory is hardest for him to accept. He then showed several lantern slides illustrating these tumors in various locations as seen in the Rhode Island Hospital.

The morning session at the Lying-in Hospital set forth the aims, organization and work of an obstetrical hospital not affiliated with a medical school. Dr. Brackett summarized the functions of the hospital and described the staff organization. Every hospital serves two functions—economic and medical. As an economic institution it should furnish adequate obstetrical care to all classes of the community at a cost which they can afford to pay. The complicated technique of asepsis and the increasing expense of diagnostic aids make hospital services necessary even for the most wealthy. The Providence Lying-in Hospital was founded and is maintained primarily for ward patients and no patient is ever refused admission on account of inability to pay for treatment. The building was erected by popular subscription and the hospital therefore acknowledges its obligation to serve all classes in the community. It is a clinical hospital and has neither funds, equipment nor personnel for effective research work except along strictly clinical lines. As a specialty hospital it aims to encourage the development of obstetrics as a specialty. Obstetrics and gynecology being so closely allied, it admits gynecological patients who have any abnormalities which might interfere with conception or normal delivery and for the repair of obstetrical injuries. The three medical functions of an obstetrical hospital are to provide medical care for women during pregnancy and labor and after labor until such time as they may be discharged obstetrically well, to raise the standard of obstetrical practice in the community and to serve as a medical health center for the education of the community in matters of pregnancy, labor and the puerperium. The staff organization is designed to carry out these functions.

There are three independent but correlated departments—the out patient, the obstetrical and the pediatric departments. The aim of the out patient department (pre- and postnatal clinics) is to give prenatal and postnatal care to all who may apply and to serve as a training school for future members of the house staff. Coöperating with the obstetrical staff are special clinics for the heart, lungs and eyes. It is under the direction of the chief of the out patient staff. To make the transition from the out patient department to the regular staff easy and natural, the heads of the service also serve as assistants to the visiting obstetricians. The pediatric staff is under the direction of a chief of staff. The new born baby as soon as it leaves the delivery room comes under the charge of the pediatric service. The obstetrical work in the house is under the direction of four visiting obstetricians each serving three months each year. They each have a first and second assistant to whom they turn over such work as in their judgment is expedient. All members of the staffs of the three departments are responsible to the chief of staff. His function is to coördinate and standardize so far as possible the work of the hospital.

Dr. Jordan discussed the economics of hospital administration. He makes an effort to collect from each patient at the hospital such amount as their economic status warrants. For this purpose the hospital employs a credit manager. He finds that many patients are willing and glad to pay for their babies on the installment plan in the same way in which they pay for gas stoves and radios. About 25% of patients are unable to pay anything for their treatment.

Dr. Potter outlined the work of the outpatient department. He emphasized the great value of prenatal and postnatal clinics to the members of the staff and to the patients.

Dr. Fulton summarized the work of the cardiac clinic. Of 2935 consecutive new cases examined in the prenatal clinic, 277 or 9.4% were referred to the cardiac clinic because of suspicious signs or symptoms. Of these 120 (or 4% of total admissions) were found to have organic heart disease and 97 were classified as potential cardiacs. One hundred and thirteen cases with organic heart disease delivered during the period covered by this report are analyzed. Seven per cent. of these patients showed some signs of congestive failure prior to delivery but none were severely decompensated. Operative delivery was resorted to in 16.8% of these cases as against 14.6% of all ward cases delivered during a corresponding period. No maternal mortality occurred in this series. Nearly 90% of this series were of the rheumatic type of heart disease.

Dr. Pinckney discussed the tuberculosis clinic. He emphasized the fact that of necessity the incidence of tuberculosis among pregnant women must be approximately identical to the incidence of tuberculosis among all women of child bearing age and that therefore every obstetrician must see many women having healed or latent tuberculosis. He pleaded for greater care by thorough examination and careful history taking in uncovering many cases of tuberculosis which must every year escape the obstetrician. He believed that routine x-ray examination of the chest in pregnancy would reveal that many obstetrical patients have tuberculosis and that by proper management of the pregnancy and the puerperium some of these women could be saved from recrudescence of the disease and many babies guarded from becoming infected in infancy. He advocated the establishment of a tuberculosis clinic in every obstetrical hospital.

Drs. Leech, Messinger and Hacking spoke briefly of the work of the eye clinic and presented cases showing the value of the coöperation between the obstetrician and the ophthalmologist. The eye clinic of the Providence Lying-in Hospital is a coördinate branch of the prenatal clinic. It was inaugurated in May 1928 with the hope that a closer coöperation be-

tween the attending obstetricians and the ophthalmologists might be obtained with special reference to cases of toxemia of pregnancy. All patients in the general clinic complaining of visual disturbance of any kind, spots before the eyes and those presenting a systolic blood pressure of 150 or over and those showing albuminuria are referred to the eye clinic. Cases showing fundus pathology are followed up by the ophthalmologists during their visits to the prenatal clinic and while in the hospital for their confinement. In addition, all cases of eclampsia in the house whether they have passed through the clinic or not are also seen by the ophthalmologist in consultation. An ophthalmoscopic examination in the 6th week postpartum is made of all cases which have shown ocular pathology. Since May 1928 until 1930, 225 cases have been referred to the eye clinic.

Dr. Appleton gave a series of moving pictures demonstrating labor room and ward technique and the care of premature infants.

Dr. Utter reported on the work of the pediatric department. He discussed particularly the care of the new born premature infant. He emphasized the supreme importance to the premature infant of the first hours or even minutes following its birth. They should be treated with extreme gentleness—full dilatation of the lungs should be promoted by inhalation of carbon dioxide in oxygen. He showed that the smaller the initial loss of weight in the first few days of life the better the chances of the baby surviving. He advocated prompt and frequent, small feedings beginning a few hours after birth. The greater weight at birth the less the mortality although many babies weighing between two and three pounds can be saved by careful management.

Dr. Adelman summarized the findings in 80 autopsies on new born infants stressing the fact that only by autopsies on the new born can the obstetrician hope to increase his knowledge of neo-natal conditions and improve his fetal mortality records. The autopsy on the new born frequently clears the obstetrician from all blame. He showed a chart of the 80 cases reported. In 10% to 12% of the cases autopsy revealed no cause of death. In 28% intracranial hemorrhage was found. This is considerably below most similar series that have been reported. He believed that if diagnosis had depended on clinical examination alone many more cases would have fallen into this group. Of the 23 cases 11 followed normal deliveries and 12 operative procedures. It was noted that in 18 of the 23 cases the anterior fontanelle was less than half the normal size and in two cases almost entirely closed. This observation would seem to point to the desirability of a change in the type of delivery if it were possible to diagnose a hard head before the beginning of the second stage. Research work on the possibility of influencing the coagulability of the infant's blood by supervising the diet and régime of the mother during the last three months of pregnancy is being done. The table showed that six of the deaths were due to infections, four of which must be classified as intrauterine in inception. In none of the cases had there been a long dry labor and in only one was there any history of the mother having suffered a severe infection in the latter half of pregnancy. There were a number of congenital abnormalities; 15 cases were classified as thymic disorders; all glands weighing over ten grams being classified as pathological. In no case was an enlargement of the thymus noted as a sole abnormality found or the sole cause of death. In over half of the cases there was evidence of hemorrhage into one or both adrenal glands. Atresia and malformation of the alimentary tract was the next most common condition found in connection with enlarged thymus. The rôle of the thymus per se whether normal in size or much enlarged remains doubtful as the sole cause of death in new born infants.

Dr. Pickles talked on combined caudal and spinal anesthesia. He outlined the rationale and technique of the method. While it is possible to do Caesarean section or hysterectomy under spinal or caudal and local anesthesia without nitrous oxide and oxygen he felt that a light general anesthesia did no harm and was a distinct advantage in combating the psychic shock which in certain cases may be of major importance.

The afternoon clinic at the Lying-in Hospital was conducted by Dr. Brackett and the four visiting obstetricians. Dr. Noyes summarized cases of toxemia of pregnancy characterized by convulsions for a three year period from 1927 to 1929. There were 57 cases of which 14 or 24% had attended the prenatal clinic and 43 or 76% were emergency cases. Total mortality was 10 or 17.5%. In the prenatal clinic cases, there was one death of 7.1%; in emergency cases 9 deaths or 20.9%. The number of fetal deaths was 24 or 42%. 56% were primiparae of whom 19% died and 44% were multiparae of whom 16% died. Thirty-one were at term of whom 7 died. Both the incidence and the death rate was greater at term than earlier in pregnancy. Mortality was 19% on the antepartum cases, 25% in intrapartum cases and 6% in postpartum cases. The onset of labor was spontaneous in 54%, induced in 41% and in 6% labor did not ensue. Labor was induced by Voorhees' bag in seventeen cases with six maternal deaths, by gauze pack in one, puncture of membranes in two and castor oil and quinine in three cases without maternal mortality. Spontaneous delivery occurred in 63%, low and mid forceps in 17%, version and extraction in 9%, Caesarean section in 3%; 5% were undelivered. In the two Caesarean sections there was no maternal or fetal mortality. Lowest maternal mortality in all modes of delivery was in spontaneous deliveries—9% and the highest in mid forceps operation—33%. Lowest fetal mortality followed low forceps delivery and the highest, version and extraction. He showed a table of 41 cases in which intravenous magnesium sulphate was given. The maternal mortality was 8, a little less than 20%.

Dr. Walsh summarized the results in 176 cases of placenta praevia for a 12 year period from 1918 to 1929. He showed a table summarizing the various modes of delivery used and maternal and fetal mortality for each method. The total maternal mortality was ten or 5.6% and the fetal mortality was 93 or 53%. The cases included private as well as

ward patients with a large number of individual operators. Bagging with version and extraction presented the largest number of cases (47); followed by manual dilatation, version and extraction (42). There were five maternal deaths by the first method and two by the second. Bagging with extraction, forceps and spontaneous deliveries accounted for 15 more cases in which there was no maternal mortality. Version and extraction not requiring bagging or manual dilatation included 17 cases with one maternal death. There was no maternal mortality in 6 cases of breech extraction. The child was expelled spontaneously by the breech 3 times without a maternal death. Seven patients were delivered by manual dilatation with mid or low forceps with no maternal mortality. Twenty-two patients of whom none died had spontaneous labor and delivery. In five cases the membranes were artificially ruptured or the cervix packed, without mortality. Baxton-Hicks version was employed twice without mortality. Among ten Caesarean sections there was one maternal death. In nine of the ten fatal cases hemorrhage and shock was the cause of death. The other case died fourteen days postpartum with a pulmonary embolus. In two cases the cervix was dilated manually and high forceps applied. One of these patients died.

Dr. Walsh felt that each case of placenta praevia should be treated according to the special indications of the particular case under consideration. He considered that manual dilatation is dangerous and should be avoided if possible. He thinks that Caesarean sections, particularly in primiparae, should in the future be more often employed both in the interest of the mother and child. He believes that Baxton-Hicks version with tamponing of the cervix with the breech should have been used more frequently. His table showed that, in 60 of the 93 deaths, the child was stillborn. Many of the deaths were due to prematurity.

Dr. Sweeney advocated an intramuscular injection of maternal blood following all operative deliveries. He believes that the incidence of intracranial hemorrhage may be reduced by this procedure, on the theory that the coagulability of the blood is increased especially in that small number of cases in which hemorrhagic disease of the new born might develop.

Dr. Buxton reported a case of Korsakoff's syndrome complicating a case of pernicious vomiting of pregnancy.

Dr. Brackett reported a case of abdominal pregnancy at term with a living mother and child.

At the Providence City Hospital for contagious diseases, Dr. Richardson demonstrated the technique of medical asepsis. The Providence City Hospital is the first hospital in America to introduce medical asepsis in a contagious hospital. By this method it is possible to treat several types of contagious disease in the same ward with fewer cross infections than occur in the usual type of contagious hospital in which each type is segregated in a separate ward or separate building. The system is based on the theory that infections are seldom air born but are usually carried from one patient to another by attendants. If the attendants are trained in the aseptic method, cross infections do not occur. As a special interest to obstetricians he gave the results of his study of carriers. His work showed that streptococcus hemolyticus was found in approximately 21.33% of cases of pharyngitis and laryngitis, 46.77% in tonsillitis, and in 62.98% of cases of scarlet fever. He felt that undoubtedly some cases of wound and postpartum infections came from visitors, attendants and doctors harboring streptococcus hemolyticus bacteria in their throats.

The business meeting was held at the Rhode Island Medical Society Library in the afternoon. The annual dinner was held at the Squantum Club with Dr. Halsey DeWolf as host.

CASE PRESENTED BY DR. BERTRAM H. BUXTON

I am reporting this case because of an unusual manifestation of an early toxemia of pregnancy. It appeared unique in my experience as well as in the experience of the staff of this hospital and I was unable to find any similar case reported in a rather casual review of the American obstetric literature and no reference to a like case in the obstetric textbooks.

Patient was first seen by me in consultation on January 2, 1927—woman of 23 or 24 years of age, supposed to have had a miscarriage of her first pregnancy in July 1926, having gone over period three weeks. Her previous history and family history were irrelevant. After an irregular period or two following the miscarriage the patient had her last flowing spell—apparently a normal period, in October 1926. At the time of my first examination, the patient was supposed to be about three and a half months pregnant and had been vomiting continuously for six weeks. Patient had returned home to her mother-in-law some five weeks previously. She had not been under medical care during that time. Her own physician saw her for the first time in a five week period and being alarmed at her condition called a consultation.

Examination revealed a three and a half months pregnancy apparently developing normally. Patient was rather dull and apathetic but mentally clear at this time. Pulse 120—full and bounding—temperature 100° — respiration 32. Blood pressure 110/80. Acetone odor to breath. Eyes sunken and with the appearance of being quite dehydrated. Urine was negative for albumen but contained acetone and diacetic acid. She was immediately sent to the hospital.

On entrance was given 700 c.c. of 10% glucose intravenously and insulin 10 units and started on colonic irrigation, corpora lutea and the usual treatment for toxemia. Patient seemed rather better the next day. On the following day slight jaundice of the sclera noted. Patient remained in the same condition for one week without great improvement, pulse ranging from 110 to 120, retaining part of nourishment. Jaundice increased somewhat and it was deemed advisable to abort.

Bougies and packing were inserted on January 10,

1927 at 4 P. M. The following morning the patient was much worse—temperature 104°, pulse of poor quality, 140, and patient complained of loss of vision. There was no evidence of labor and the question of doing a vaginal Caesarean was debated but not thought advisable because of the poor condition of the patient. Stimulation started with intravenous glucose. Some twelve hours later the patient delivered a four months' fetus, the placenta being removed under gas oxygen. The next day she became quite irrational. During the next week her general condition improved slightly but her mental condition remained about the same.

On January 15 she began to complain of soreness of the legs, following which it began to be evident that the patient had a multiple neuritis with double toe and wrist drop. This developed until all four extremities were practically paralyzed by the end of the month. The patient's mental condition grew worse and at times she had hallucinations and other mental activities which Dr. McDonald can explain better than I. Dr. McDonald was called in consultation and a diagnosis of Korsakoff's syndrome was made. The patient was transferred to another hospital where she remained for four months and has finally almost completely cleared up.

Dr. McDonald will take up the case from the neurological side.

The interesting part of the case from the obstetrical point of view is the manifestation of the toxemia in the form of multiple neuritis with the mental symptoms known as Korsakoff's syndrome which is generally caused by alcohol or some like poison but apparently in this case was due to toxins incident to the pregnancy.

Consultation with neuropsychiatrist: Dr. Charles McDonald.

January 29, 1927. Patient was in a muttering delirium and looked very sick. There were normal cranial nerve functions, taking into consideration the patient's inability to coöperate. There was a bilateral wrist drop and a bilateral toe drop of severe degree. The reflexes of the arms and of the legs were absent. The hands and feet were moist and cool to palpation. Pressure over the nerve trunks of the legs produced a facial expression of pain. Blood Wassermann was negative. A lumbar puncture was not done. The nurse stated that at times the patient would come out of her delirium and would talk. She would speak about being pregnant—of having had two babies—of being at home—of being in the Boston Lying-in Hospital. In these talking episodes she was not oriented for time and place.

February 16. Patient transferred to Rhode Island Hospital for further examination and for treatment of the peripheral neuritis and psychotic disturbance. On this date, there was no delirium but the patien showed a marked memory defect; of her residence in the Lying-in Hospital and of the loss of her child she was unaware. She was at times disoriented and not infrequently made, in evident good faith, statements about her present social and medical status which were plausible but not pertinent to the truth. The multiple neuritis of severe degree showed no changes.

March 24. X-ray examination of both knees and both wrists shows a slight amount of bone atrophy. Otherwise the examination is negative.

October 21, 1927. Of the right arm, the biceps and triceps jerk were present to a slight degree. There was a wrist drop and five fingers could partly cone; likewise there was a weakness of the left arm and hand. There was some thickening about the wrist joints. Flexion of the thighs was painful, especially of the left. The knee jerks were absent and the Achilles, too. There was knee joint crepitus. The calves were soft. A bilateral foot drop was present. There was thickening about the ankles and dorsal flexion was passively mechanically limited. Of the legs, deep muscle sense was nil—also the vibratory sense. The heel-knee test was well done. She complained of burning and tingling in her lower legs. At this time she was home and taking considerable interest in the conduct of home affairs. About her Lying-in experiences she was amnesic. Her memory in general had improved much yet she was forgetful about whether the mail had come or gone, she could not retain telephone messages and several times forgot to send messages. On several occasions she bridged her memory gap. There was no great fabrication but there were small ones. In general conversation, when talking about dinner, she would detail the dinner yet might change roast lamb for roast beef. She called a laundry and criticised for not having received her laundry when as a matter of fact she had not sent it. One evening when her husband returned, there was ready a special dinner and she told her husband that her sister was coming for dinner. The husband phoned the sister after holding the dinner some time for her and the sister replied that she had not been invited. The general condition of the patient had greatly improved.

October 5, 1928. Patient reports that she does 5/7 of her housework — that she goes without her braces, parts of every day. Some days forgets to wear the braces and some days forgets to take them off. Her hands in motor power have improved much. In the lunch room, lately, she ordered her dinner twice without any awareness of the mistake, and at another time, made a complaint of too long a wait for her dinner when she had not ordered it. About these memory disturbances her husband says she is very sensitive.

January 11, 1930. Patient reports general health good. Some nights does not sleep because she cannot lose consciousness. Does lots of work, drives an automobile. Walks quite well without braces—more confidence in standing—no numbness—"I feel quite a lot in my feet and know that my feet are on the accelerator." Examination at this time showed that the thickening at the wrist joints had practically disappeared; still some thickening exists about the

ankle joints—one foot can be flexed to about right angles. The other one to almost right angles, voluntarily. The wrist drops have disappeared and the finer movements of the hand have recovered up to 90 per cent. The tendon reflexes of the arms and legs were absent. Atrophy was not noticed. Vibratory sense was present in the arms and perceived for a few seconds when the tuning fork was placed over the malleoli. Joint sense of the toes absent. Her husband stated that memory had greatly improved and only rarely was a defect noticed.

As previously stated Korsakoff's Psychosis is not a common disease—it was seen occasionally in chronic alcoholics who drank real liquor—now the alcoholics do not live long enough to get neuritis. Korsakoff's Psychosis is extremely rare in pernicious vomiting of pregnancy. In the neurological literature a few cases have been reported in pregnant women, but I have not found in the literature a case like this one which has been followed for so long a time—after the onset of the neuritis and the memory fabrications.

Summary:

1. A Korsakoff's psychosis (peripheral neuritis plus mental disturbance, presenting memory defect as a major).
2. An osteo-arthritic condition showing clinically and by x-ray.
3. Mental and neurological residuals three years after onset.

CASE PRESENTED BY DR. EDWARD S. BRACKETT

S. G. No. 6728. Admitted to the ward May 27, 1929.

Chief Complaint:—Vomiting for which she was sent to the hospital by her family physician.

Past History:—She had had no previous illnesses. She had had yellow vaginal discharge for six months not very profuse and without urinary symptoms. No history of acute pelvic inflammatory disease. Occasional fainting attacks since previous pregnancy. She has had colostrum in breasts for the last five years. Menstruation has always been irregular both as regards the interval and character of flow. No unusual amount of pain. One previous pregnancy terminating at full term probably instrumental although the patient's statements were not consistent in this regard. Child was born dead. Weight was not known. Patient stated that she was in labor from 11 P. M. to 9 P. M. the following night when she was given ether.

Present History:—The history was entirely unreliable and varied. On January 29 there was a slight chocolate colored discharge lasting for twelve hours. The last menstrual period was on February 26 lasting for two days. During the month of March she was frequently nauseated and vomited after meals. During this month also she had lower midline abdominal pain transient in character. On March 26 and late in April there were periods of slight bloody vaginal discharge and the abdominal pain continued. Vomiting continued up to ten days before her admission when she was seized with extremely severe pain in the suprapubic region and the vomiting became more pronounced. It was difficult to elicit from the patient the character, severity and duration of the pain but apparently the severe pain was not of long duration as her principal complaint on admission was continued vomiting although there was still some suprapubic pain of moderate character. On deep inspiration or cough, pain was accentuated particularly in right lower quadrant. There had been no vaginal bleeding during the month previous and no urinary symptoms.

Physical Examination:—Well developed and nourished woman of 23 who had just vomited. Her pulse and respiration were normal—blood pressure 114/75. Head, neck and throat showed no abnormalities—heart action normal and lungs clear—breasts soft—colostrum could be expressed. Abdomen was protuberant below the umbilicus giving the appearance of pregnancy of five months. No fetal heart could be heard over the tumor which was very hard and tender. Extreme tenderness and marked rigidity in both lower quadrants with slight tenderness in left hypogastrium. Vaginal examination showed a normal parous outlet. Anterior cervical lip was soft, slight bilateral tear. Cervix was long and conical—Hegar's sign absent—there was a mass rising from the pelvic wall above the pubis in the mid line which was firm and tender. It could not be moved without causing great pain. Both vaginal vaults were extremely tender. No masses could be felt nor fluid in the posterior cul-de-sac. Her temperature was 101°, pulse 120, respiration 24. Urine was negative. W.B.C. 18,600—83% polymorphonuclears, 17% mononuclears, R.B.C. 2,360,000—hgb. 45%. Slight anisocytosis, occasional polychromatophilia, no stippling, no nucleated cells and moderate achromia. Blood sedimentation time was seven minutes.

She remained in the hospital for 19 days. The abdominal tenderness, pain and vomiting rapidly disappeared. She was entirely free of symptoms 12 days after admission. On June 15 she was examined vaginally. Vaginal outlet fairly firm. Cervix rather long and moderately soft. In the mid line there was a globular mass which felt like a normal pregnant uterus except that it was slightly firmer than usual. It was very slightly tender. The uterus could not be felt separate from the mass. Behind and to the right of the uterus there was marked thickening which was indefinite in outline, fixed and moderately tender. An extrauterine pregnancy had been suspected on admission but as the patient was unmarried there was a suspicion that there had been an attempt at producing an abortion and she was normally pregnant with an inflammatory condition also present.

As her hgb. had risen to 45%, w.b.c. had fallen to 13,200 and the sedimentation time had risen to 25 minutes, it was not felt that an exploratory laparotomy was justified in the face of the improvement of the patient and the absence of vaginal bleeding for six weeks. It was felt that if an ectopic pregnancy were present that symptoms would develop

later which would definitely point to operation. She was therefore discharged to the O.P.D.

She reported regularly. The abdominal mass enlarged commensurately with the advancement that would presumably be normal in pregnancy. June 10 an x-ray was taken which showed the shadow suggestive of a large uterus rising well over the pelvis to 3½ inches above the level of the promontory of the symphysis. July 24 another x-ray showed evidence of the fetus above the pelvis largely to the left of mid line. Fetal heart was first heard on September 6 in left lower quadrant—rate 160. Urine continued normal throughout. She was examined regularly in the O.P.D. and various opinions expressed—some holding that it was a normal pregnancy and others being inclined to think it was an abdominal pregnancy.

On September 6, the day on which the fetal heart was first definitely heard, the following notes were made. "Height of fundus 28 cm. It was difficult to outline the fetal parts. There seemed to be a definite demarcation between the lower uterine segment and the upper segment. The lower segment was very soft and the upper containing the fetus was hard. Question of abdominal pregnancy."

On October 20 examination under ether was made. The promontory of the sacrum was very prominent. The cervix was elongated and not developed. Most of the development was in the upper part of the uterus. The fetus was in transverse position. Caesarean section was advised immediately, should the patient start in labor. Otherwise it should be done a few days before term. No definite diagnosis was made. It was felt that in view of the history of the present pregnancy, the operative delivery with the stillbirth of the previous pregnancy, the projecting promontory of the sacrum, the atypical feeling of the uterus with the transverse presentation, that an abdominal section was indicated in the interest both of the mother and child.

This was performed under general anesthesia on October 25, 1929.

Operation — laparotomy. Condition found — intra-abdominal pregnancy. Surgeon—Dr. Brackett. Assistant—Dr. Dion. Anesthetist—Dr. Houston.

Abdomen opened by median incision from pubis to three inches above umbilicus. Immediately on incising the preperitoneal fat and before the peritoneum was opened, a dark bluish tumor was exposed at the lower end of the incision. The tumor was soft and covered with a network of sinuses the size of the middle finger. It had the appearance of a placenta. At the upper edge and attached thereto there was a shiny, transparent membrane containing a very few blood vessels beneath which could be felt fetal parts. This membrane was incised and as the incision was carried upward the peritoneal cavity was opened, amniotic fluid escaping. A living fetus weighing five pounds and 14¾ ounces was extracted by the breech.

It was then apparent that the bluish tumor was the placenta and the shiny membrane the fetal sac fused for a short distance with the peritoneum of the anterior abdominal wall. The fetus lay diagonally across the upper abdomen, the head in the right hypochondrium with the buttocks to the left, well above the pelvis with the back downward. The cord was clamped and tied and the child taken in charge by an assistant. The cavity of the amniotic sac was bounded below by the placenta, above by the right leaf of mesentery, the bowel which was not identified except as belonging to the small intestine, anteriorly by the free cavity of the peritoneum, posteriorly by the peritoneum and posterior abdominal wall, to the left by the mesentery and to the right by the abdominal wall. The uterus was not identified but evidently was retroverted and to the left.

The slightest manipulation caused active bleeding from large veins covering the placenta. An attempt was made to control it by suture but as soon as one point of bleeding was controlled another developed. It was evident that if the placenta were left in situ the patient would die of hemorrhage. This bleeding was controlled by gauze pressure in the hand of an assistant.

Hurried exploration showed that the placenta was implanted in front of the uterus and extended upward along the anterior abdominal wall. The main blood supply came from the right broad ligament which had developed into a pedicle connecting the right horn of the uterus with the placenta. The right infundibulo-pelvic ligament was clamped, cut and tied. Bleeding from the placenta thereby practically ceased. The right ovary and presumably the remains of the right tube and broad ligament were clamped, cut and tied. By blunt dissection the placenta was freed to its edge in small sections which were clamped and tied in successive sections close to the edge of the placenta. In some sections the space between the placenta, the small intestine and the omentum was alarmingly small. The placenta was finally free.

A section of cord ¾ inches long was adherent to the posterior abdominal wall. The arms of the loop were tied and cut across leaving a short section of the cord adherent. The amniotic sac which was adherent to the peritoneum of the posterior abdominal wall, small intestine and mesentery was not disturbed. The abdomen was closed in layers. The patient stood the operation and loss of blood surprisingly well. Her pulse on leaving the table was 130 but regular and of good quality and her respiration was 40. The operation took 30 minutes.

Findings at the operation indicate that the ovum was implanted in the right tube. About the third month just previous to her admission to the hospital a rupture occurred in such a location that the ovum was extruded into the vesico-uterine cul-de-sac and the placenta remained attached to the tubal mucous membrane. The placenta developed normally and grew upward along the anterior abdominal wall, while the amniotic sac pushed its way upward to the right of the mesentery.

The fetus weighed five pounds, 14¾ ounces. The contour of the left frontal bone was distorted and

the forehead somewhat flattened. Epicanthus noted on the left. The right maxillary bone was flattened; no epicanthus. Occipital region seemed somewhat twisted to the right giving the appearance of a prominence in that region. Distortion of the head was probably due to pressure. The head was somewhat elongated in the occipito-frontal diameter. Left side of face suggestive of Mongolian idiocy. Right side of face normal. Tongue was not enlarged. Mouth breathing not noticed. Positive diagnosis of Mongolian idiocy could not be made. Other than the abnormalities of the head noted, the physical examination was entirely negative.

The patient had a rather stormy convalescence developing a mural abscess at the lower angle of the wound. A smear showed a pure culture of colon bacillus. The literature notes the fact that these patients are particularly liable to infection on account of the intimate relation of placenta and amniotic sac to the intestines. In this case the placenta was not in close proximity to the intestinal tract and it is difficult for me to explain why the infection should have occurred. On discharge the patient still had a small sinus at the lower angle of the wound but otherwise was in good condition. The baby weighed six pounds and eleven ounces and seemed normal. The patient has moved out of town but I heard, indirectly, that last week mother and child were both well.

There are several points of interest to be noted in this case.

1. The w.b.c. and sedimentation time were of no help in the differential diagnosis between an ectopic and an inflammatory condition.

2. A reliable, intelligent history is sometimes essential in making a correct diagnosis.

3. The mode of development in this case was unusual in that the ovum was extruded in front of instead of behind the broad ligament. The placenta therefore attached itself to the anterior abdominal wall rather than the posterior surface of the board ligament.

4. It is always unwise to open an abdomen with a fixed idea of the procedure which will be followed. I had it firmly fixed in my mind that if an abdominal pregnancy were encountered I should make no attempt to remove the placenta having twice previously met with disaster in following such a course. Valuable time and blood were lost in trying to stop the hemorrhage from the maternal surface of the placenta when the right infundibulo-pelvic ligament should have been clamped immediately without any attempt to stop hemorrhage except by gauze pressure.

5. When the placenta is attached to the abdominal wall there is no alternative but to remove the placenta.

MASSACHUSETTS GENERAL HOSPITAL

Clinical Meeting

The evening Clinical Meetings of the Massachusetts General Hospital to be held on the second Thursday of the month will be resumed. The first meeting is scheduled for November 13 and will be devoted to various aspects of the problem of Malignant Disease, particularly with reference to the methods of treatment which have been proposed during the past few years. The detailed program follows:

FIRST MEETING

8:15—Presentation of Cases.
8:40—Dr. Henry Jackson, Jr.—Biological Aspects of Cancer.
9:00—Dr. Reginald Smithwick and Dr. J. C. Aub—The Lead Treatment of Cancer. (Blair Bell).
9:10—Dr. E. M. Daland—The Tuberculin Treatment of Cancer.
9:18—Dr. Charles C. Lund—The Fischer-Wasel Oxygen Treatment of Cancer.
9:26—Dr. O. O. Meyer—(1) The Use of Extracts of Adrenal Cortex in the Treatment of Cancer. (2) The Treatment of Cancer with Thymus Extract (Hansen).

CARDIAC COURSE

We desire to call attention to the first exercises of the Cardiac Course to be held at the Boston Medical Library, Sprague Hall, Wednesday, November 5 at 4:30 P. M.

The program follows:

1. 1) Auscultation. Heart Sounds.
   Dr. Howard B. Sprague, Boston.
   2) Heart Murmurs in the Practice of Medicine.
   Dr. William D. Reid, Boston.
   3) Heart Murmurs and Insurance.
   Dr. Francis H. McCrudden, Boston.
   4) Discussion to be opened by
   Dr. William H. Robey, Boston.

The complete program of the Cardiac Course appeared in the issue of October 23, page 854.

BERKSHIRE DISTRICT MEDICAL SOCIETY

Censors' Meeting

The meeting of Censors for the Berkshire District Medical Society will take place at the Berkshire Life Insurance Company Building, Directors Room, Thursday, November 6, at 4:00 P. M.

Hugh Downey, M.D., *Secretary.*

NORFOLK DISTRICT MEDICAL SOCIETY

Censors' Meeting

The meeting of the Censors of the Norfolk District Medical Society will be held in the Roxbury Masonic Temple, 171 Warren Street, Roxbury, on Thursday, November 6, at 4:00 P. M.

F. S. Cruickshank, *Secretary.*

HARVARD MEDICAL SCHOOL

Lectures on "The Care of the Patient," Amphitheatre C at 5 p. m. as follows:

Wednesday, November 12, Dr. David Cheever, Associate Professor of Surgery, Harvard Medical School.

Wednesday, November 19, Dr. David Riesman, Professor of Clinical Medicine, University of Pennsylvania Medical School.

GREATER BOSTON MEDICAL SOCIETY

A joint meeting of the Greater Boston Medical Society and the Beth Israel Hospital will be held on Tuesday, November 4, 1930, at 8.15 P. M. at the Beth Israel Hospital.

Program:

Case History Presentations:

Discussion of Medical Case, Dr. Richard C. Cabot.

Discussion of Pediatric Case, Dr. John L. Morse.

Discussion of Surgical Case, Dr. Edward L. Young.

BERNARD I. GOLDBERG, M.D., *Secretary.*

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

CENSORS' MEETING

The censors of Middlesex South District Medical Society will meet for the examination of candidates at the Medical Library, No. 8, The Fenway, Thursday, November 6, 1930, at 2:00 o'clock.

Candidates should make application to the Secretary, and present their medical diplomas at least one week before examination.

ALEXANDER A. LEVI, *Secretary.*

SUFFOLK DISTRICT MEDICAL SOCIETY

CENSORS' MEETING

The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, No. 8 The Fenway, Thursday, November 6, 1930, at 4.00 o'clock.

Candidates should make personal application to the Secretary, and present their medical diplomas at least one week before the examination.

LELAND MCKITTRICK, *Secretary.*

205 Beacon Street, Boston, Mass.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

November 4—Greater Boston Medical Society. See details above.
November 5—Cardiac Course. See page 902.
November 10—Atlantic Dermatological Conference. See page 801, issue of October 16.
November 12, 13, 14—The Annual Convention of the American Academy of Physical Therapy. See notice on page 856, issue of October 23.
November 12 and 19—Harvard Medical School. Lectures on "The Care of the Patient". See page 902.
November 13—Massachusetts General Hospital. Clinical meeting. See page 902.
November 19—New England Obstetrical and Gynecological Society. See page 855, issue of October 23.
March 23-27, 1931—Fifteenth annual clinical session of the American College of Physicians. Detailed notice appears on page 790, issue of April 17.
July 27-31, 1931—Third International Congress of Radiology, Paris. Complete notice appears on page 385, issue of August 21.

DISTRICT MEDICAL SOCIETIES

Berkshire District Medical Society

November 6—Censors' meeting. See page 902.

Bristol North District Medical Society

April 16, 1931—Taunton Woman's Club.
September 17, 1931.

Franklin District Medical Society

November, 1930-May, 1931—The meetings are held on the second Tuesdays of November, January, March and May at 11 A. M. at the Weldon Hotel, Greenfield.

Hampden District Medical Society

November 6—See page 855, issue of October 23.

Middlesex East District Medical Society

November 12—New England Sanitarium and Hospital, Stoneham.
January 14, 1931—Harvard Club of Boston.
March 11, 1931—At Reading.
May 13, 1931—At Wakefield.

Middlesex South District Medical Society

November 6—Censors' meeting. See notice elsewhere on this page.

Norfolk District Medical Society

November 6—Censors' meeting. See page 902.

Suffolk District Medical Society

November 6—Censors' meeting. See notice elsewhere on this page.
November 19-April 29—Combined meetings with the Boston Medical Library. These meetings will be held as specified below on Wednesdays, at 8:15 P. M.
November 19, 1930—Clinical Program, Massachusetts Memorial Hospitals.
December 17, 1930—Clinical Program, Boston Dispensary.
January 28, 1931—General meeting in association with the Boston Medical Library at the Boston Medical Library. "The Practice of Medicine in Relation to Public Health Activities." Speakers to be announced later.
February 25, 1931—Clinical Program, Boston City Hospital.
March 25, 1931—Clinical Program, Beth Israel Hospital.
April 29, 1931—Annual Meeting. Election of Officers. Boston Medical Library.

The medical profession is cordially invited to attend all of these meetings.

GEORGE S. DERBY, M.D.,
President, Suffolk District Medical Society.
LELAND S. McKITTRICK, M.D.,
Secretary, Suffolk District Medical Society.
HILBERT F. DAY, M.D.,
Boston Medical Library.

BOOK REVIEWS

CORRECTION

"Osler's Principles and Practice of Medicine" was reviewed in our issue of October 16. The price was incorrectly stated at $8.00. It should have been $8.50.

The Pathology of Diabetes Mellitus. By SHIELDS WARREN. 212 Pages. Lea & Febiger, Philadelphia, 1930. Price $3.75.

This is the first monograph upon the pathology of diabetes based upon so large a series of autopsies. It reviews the slow development of modern knowledge of the relationship of the pancreas and diabetes and the almost dramatic transition from the attitude of hopelessness toward treatment in the past to the present day confidence borne of the discovery of insulin.

The histology of the normal pancreas and the changes found in the pancreas both in diabetes and non-diabetic individuals naturally occupy nearly a third of the text. The most modern staining methods, including those of Bensley and modifications by the author, have been applied. Illustrations are numerous and excellent, consisting of 83 engravings and 2 colored plates.

The attention of the reader is struck by the fact that so much of the pathology of diabetes is outside the pancreas. The pathological evidences of abnormal carbohydrate and fat metabolism in the skin, spleen and reticulo-endothelial system, liver and gall bladder are discussed in a new and engaging manner. Arteriosclerosis, generalized but with its peculiar accentuation in the legs and heart is

presented first with a decidedly clinical slant before an all too brief discussion of the etiology. Acute infections caused death in 126 of the 300 autopsies reported, indicating again the peculiar susceptibility of the diabetic, for which the explanation at present does not seem clear.

Special topics include the pathology of diabetes in children, in cases of long duration, and in association with thyroid or other endocrine disturbances. Hemochromatosis is discussed as an instance of diabetes produced by a known etiologic factor. In certain insulin-resistant cases hemochromatosis in two instances and carcinoma of the pancreas in a third were found.

A most interesting chapter is devoted to theories as to the etiology of diabetes. In two appendices may be found descriptions of pathological methods, especially of stains, and a table of mortality statistics.

This is a scholarly and useful book, valuable not only to the pathologist but to the internist and surgeon as well.

An Introduction to Malariology. By MARK F. BOYD. Harvard University Press, Cambridge, Mass., 1930. Price $5.00.

This book is addressed primarily to those who are engaged in the fight against malaria, the greatest scourge of the tropics. Boyd emphasizes the natural history of the disease, and the natural history of the Genus *Anopheles*, and he points out the differences in habit of different species of the Genus and discusses surveys in their relation to measures for control. The stress upon biology lends the book a certain degree of originality.

In the opinion of the reviewer, Boyd attaches excessive importance to the spleen-rate as an index of the prevalence of malaria. Although high enough to be a useful guide in many regions it is so low in other parts of the world as to be misleading.

Nevertheless, the book as a whole is excellent, shows originality of presentation and can be recommended to students of malaria control.

Manual of Physiology for Students and Practitioners. By H. WILLOUGHBY LYLE, and DAVID DESOUZA. Humphrey Milford, Oxford University Press, 1930. Third Edition. Price $5.25.

"For this edition the text has been carefully revised in order to bring the book up to date.

"Some sections have been rewritten and many additions have been made, but excisions have also been found possible, so that the size has not been unduly increased."

The task imposed by this quotation from the preface has been accomplished in such a way that the book is on the whole reasonably contemporaneous, even though this cannot be said of every section, for example, those dealing with proteins and respiration. It is the reviewer's opinion that too much space, for a book of this size, is allotted to the description of chemical tests, a subject better included in a text for physiological chemistry. The book is so brief that it will hardly serve as a text in our medical schools; further the presentation is such that there is little to stimulate curiosity. The Manual might serve in a course of college physiology as well as a résumé for reviewing a more extended course in physiology.

The Biological Basis of Human Nature. By PROFESSOR H. S. JENNINGS.

The book here reviewed, The Biological Basis of Human Nature, by Professor H. S. Jennings of Johns Hopkins University, is written by a scientist of great repute and learning, a lucid teacher, who presents the subject matter of genetics dispassionately and yet with so fine a purpose of human enlightenment as to make his book preëminent in the field. The facts are there, and there is an Olympian character to their evaluation which does not brush away the doubtful places nor gloss over the conflict of opinions. Yet one is left hopeful that the new science of genetics is on the road to the production of eugenics which will take into account the environment as well as the germ plasm. To say that the book is well worth reading is to put it in milk-sop fashion. It is a book worth studying, mulling over, and living with, since it consolidates the work on the most important of subjects in masterly fashion.

The first part deals with the experiments on genetics which revolve around the discovery of the gene. Since this is largely recent work, and since it is essentially technical and experimental, Jennings wisely says that no one can understand heredity who has not carefully studied the rôle of the genes in creating biological characters. The work on Drosophila, which is so important to modern genetics, is given with enough detail and with such excellent illustrations that a careful reading will give to the medical man who knows something about chromosomes and the mechanism of fertilization a basis of great value. Essentially, the theory of the gene, built up as it is on exact experimentation, shows that there is a line-up of genes in the chromosomes which has as particular a localization as, for example, the line-up and localization of nerve fibres in relation to the functions of the nervous system, and that the characters which appear in the offspring are definitely related to the matching of the genes of the parents. It then appears that there are no unit characters in the sense that a single gene or even a group of genes carry the materials for such a character that each character appears as the resultant of many groups of gene relationship; that the object of the science of genetics is to determine more and more exactly the distribution and the dominant-recessive values of the genes responsible for biological characters.

Of as great importance as the discovery of the genes is the discovery that the ever-prevalent environmental forces maintain a pressure on the genetic line-up, and therefore each character as expressed is not merely a result of the gene arrange-

ment, but really springs from the relationship between the genes and specific environmental forces. The experiments which indicate this are most extraordinary and are given in detail in this book. It then appears that with the genetic arrangement which tends to produce certain characters, especially defective characters, changes in the fundamentals of the environment, such as alterations in heat and moisture, prevent the appearance of what are definitely hereditary characters in favor of what appear to be new hereditary characters. Thus with Drosophila. In Axolotl, introducing artificial amounts of thyroid substance transforms a water animal with hereditary characteristics suitable to its fluid environment into a land animal with hereditary characteristics adjusted to its land environment. Jennings indicates that vitamines and hormones, environmental forces in so far as individuals are concerned, are capable of changing hereditary potentialities and powers, and that with these and other forces man has the tools by which he can manipulate the germ plasm of the lower animals, if not his own. Thus we find that natural conditions affect what the genes produce, that sunlight, heat, and moisture are of great importance in heredity, though they are environmental agencies. Jennings states, "Characteristics do not fall into two mutually exclusive classes, one hereditary, the other environmental. A given characteristic may be altered by changing the genes; and this is the ground on which it is called environmental. The genes supply one set of conditions for development, the environment another set, and there is no necessary difference in kind between them. The characteristic produced may be changed by adequate alteration of either set. From the nature of a distinctive characteristic, it is not possible to decide whether it is due to diversity of genes or to diversity of environment, since the same peculiarity may be due in different cases to either set of causes."

Of great importance in this connection are the experiments of Müller who showed that the mutation rate (i.e., the capacity to form new species which is the very heart of the genetic and the evolution problems) can be altered by such environmental forces as the x-ray and radium. It is interesting to note that even so short a time ago as 1923, Müller declared that he had found no way of increasing the mutation rate, while in 1929, his work in increasing the mutation rate received acclaim and a prize, thus showing that what is impossible today, even in so profound and difficult a matter as the mutation rate, becomes possible tomorrow.

Jennings does a great service in discussing at length what he calls the biological fallacies and human affairs. I recommend his discussion of this subject, which is some 16 pages long, and packed with volumes of wisdom, to everyone who wishes to apply knowledge of any type to human problems. He shows how possible it is to apply non-experimental judgments in matters of heredity and development, since these are not dependent so much on general laws as they are on specific and definite situations. He shows that it is common to attribute to one cause what is due to many causes, something which the medical man does quite regularly, as witness the eagerness with which he follows "toxic infection", "vitamine deficiency", "endocrine imbalance", "complexes", as if these were sole causes rather than parts of a situation. The fallacy of concluding that because one factor plays a rôle another does not, follows along this line and is, as Jennings puts it, "The fallacy of drawing negative conclusions from positive observations." The fallacy that "like produces like" is treated with gusto and detail; since each individual carries diverse genetic possibilities and expresses in his characteristics only one of those possibilities, it is always possible that in his union with another individual the genetic line-up will bring about strikingly diverging characters in the offspring.

The fallacy that showing a characteristic to be hereditary proves that it is not alterable by the environment is perhaps of the greatest importance to us who deal with defective human beings whose defect seems to be hereditary. For any hereditary factor to express itself a definite environmental relationship is necessary. If one can change that environmental relationship, the defective hereditary character need not express itself. True, the difficulty in finding that environmental line-up is at present almost insuperable, but that does not mean it will be so in the future, and merely indicates a line of most important research.

Thus, all the talk of the inheritance of mental diseases and feeble-mindedness merely means that given certain circumstances, a few types of mental diseases and a few of the forms of feeble-mindedness demonstrate themselves for generation after generation. We need not be dismayed by this. There is some environmental line-up which can alter that hereditary expression, and to all intents and purposes bring about normal individuals. As man develops in science, he merely develops in the ability to utilize the infinite diversity of environmental factors for his purposes. The purpose of bettering genetic expression should be Man's primary aim.

Jennings states in this connection, "It appears indeed probable from the present state of knowledge and the trend of discovery, that the following sweeping statements will ultimately turn out to be justified:

(1) All characteristics of organisms may be altered by changing the genes; provided we can learn how to change the proper genes.

(2) All characteristics may be altered by changing the environmental conditions under which the organism develops; provided that we learn what conditions to change and how to change them.

(3) Any kind of change of characteristics that can be induced by altering genes, can likewise be induced (if we know how) by altering conditions. (This statement is open to more doubt than the other two; but it is likely eventually to be found correct.)"

Without having the knowledge and experience nec-

essary to formulate the above, I have held it to be the case for many years, and so it is natural enough for me to be highly enthusiastic about this point of view. There is only one criticism which I wish to make, namely that Jennings does not lay enough emphasis on what was called blastophthoria by August Forel. This is the condition of impaired germplasm produced by penetrating and pathological environmental forces. For us who are medical men, the ovary and the testicle, which are the guardians of the genes and therefore of the hereditary qualities, do not live in a sanctum sanctorum. They are exposed to infections, and they suffer with the rest of the organism from disease and atrophies, tumors, toxic states, etc. While blastophthoric forces do not create new characters, they impair the quality of characters by injuring what we may loosely call the vitality of the gene. This lowered genetic power may last for several generations and thus produce hereditary defect for that length of time. *In human affairs, a period covered by four or five generations is fully as long as any known human hereditary defect can be proven to exist.* We know of no feeble-minded families, no insane groups, and no defective groups of any kind in which the same character has appeared for more than four generations. It is conceivable, and I believe probable, that blastophthoric relationships of the environment to the hereditary forces are responsible for what we call the heredity of mental diseases, to cite a human situation with which I personally am familiar.

The Surgical Clinics of North America. August, 1930. Vol. 10, No. 4. Southern Number. W. B. Saunders Co., Philadelphia.

This volume offers a selection from several of the leading clinics of the South. From Vanderbilt University and St. Thomas Hospital W. D. Haggard discusses intrathoracic goiter, perforated duodenal ulcer, malignant obstruction of the colon, enterogenous cyst of the ileum causing obstruction, and complete avulsion of the scalp. The case of carcinoma of the descending colon had a resection, recurrence with complete obstruction, cecostomy, a first stage Mikulicz, obstruction of the small intestine relieved by ileostomy, a sloughing between two loops of colon making a spontaneous second stage Mikulicz, and eventual recovery. Resuture of a completely avulsed scalp always fails, but skin grafting following drilling of the outer table of the skull gives a good result.

C. Jeff Miller of Tulane University presents cases illustrating radium as a temporary hemostatic measure in a large uterine fibroid, thrombophlebitis of both legs following manual removal of the placenta, and abdominal pregnancy after Caesarean section. The preliminary use of radium will allow the patient to regain sufficient strength to safely undergo a hysterectomy. In the case of abdominal pregnancy the uterus was ruptured at seven months and the placenta was found attached to the omentum. A catheter which had been introduced to induce labor was found in the abdomen. At the first operation nothing was done beyond removal of the baby, placenta, and catheter. Later the uterus was removed.

Aneurysm is a favorite topic. Barney Brooks of Vanderbilt discusses a case of aneurysm of the axillary artery while H. A. Royster of Raleigh includes in his clinic aneurysm of the brachial artery, reconstructive endo-aneurysmorrhaphy, and huge aneurysm of the sciatic artery simulating a sarcoma of the buttock; and W. L. Peple of the McGuire Clinic, Richmond, considers arteriovenous fistula.

Stuart McGuire gives a well balanced presentation of the problem of medical versus surgical treatment of duodenal ulcer.

W. C. Campbell of Memphis demonstrates by a series of illustrated cases the indications and technic of fusion of tuberculous joints.

Alton Ochsner shows the value of iodized oil in the treatment of bronchiectasis and reports a case of osteogenic sarcoma developing in Paget's disease of the bone.

Several other interesting clinics from different Southern cities add much of value to this number.

Tropical Medicine in the United States. By Alfred C. Reed. J. B. Lippincott Company. 410 pages. Price $6.00.

Although this volume is small and compact, the print is clear and sufficiently large. The subject matter is well arranged. The text is condensed to meet the needs of the physician in the United States who, in the course of his daily work, has run across some ailment of a possibly tropical nature about which he desires quickly to ascertain the main facts. As such, the book fulfills its purpose admirably.

History of Haitian Medicine. By Robert P. Parsons. New York: Paul B. Hoeber, 1930. xxviii + 196 pages. Price, $2.25.

This little book covers briefly the history of medicine in one of our smallest possessions. The early history of a more or less isolated island, subject to serious political and racial changes, with an absolute ignorance of medicine, is simply a story of turmoil, blood and struggle by a few poor white planters and many black slaves. All this was changed, however, by the American occupation in 1915 and since that time Haiti has become almost a sanitary paradise, due to the combined efforts of the United States Army, Navy and Public Health Service. Yellow fever has largely disappeared through the instigation of methods similar to those used by Gorgas in the Panama Canal and the Philippines. Yaws is still a great menace but is succumbing to treatment by arsphenamine. There are interesting notes by Parsons in regard to the controversy about yaws and syphilis. Many have thought that they were the same disease and Parsons rather supports the idea that "the two diseases are identical except that they are operating under very different conditions".

This book is well written and will interest many, for little is known by the average physician about Haitian medicine and what has been done by our government to make this little island inhabitable.

The Treatment of Schizophrenia. By LELAND E. HINSIE, M.D. Pp. XVII + 206. The Williams and Wilkins Company, Baltimore, 1930. Price $3.00.

Through the recent advances in the dynamic approach to psychiatry, it is now generally recognized that the term "schizophrenia" embraces a wide variety of clinical pictures. There are, however, certain basic elements and mechanisms common to the schizophrenic group, in particular the part played by the ego and libido trends of the personality of the individual in the development of the psychosis. In fact, in schizophrenia, it is the personality factors, the life situations and reactions, the type and depth of the conduct disorders, which are the most important and not the former insistence on an artificial and rigid classification. Due to the progressive interest in mental hygiene, an ever increasing number of schizophrenic patients in the incipient stage of the disease, are seeking treatment. The former pessimistic attitude towards the disease, particularly on its progressive and deteriorating aspects, is now slowly giving way to a more optimistic one, due to a better understanding of the mental mechanisms of the disorder. There is taking place a gradual dissipation of the former ideas that schizophrenia was a circumscribed disease with a gloomy prognosis. In place of this fatalistic attitude, it is now interpreted as a biogenetic reaction-type which may present symptoms of all degrees of severity and consequently with various possibilities as to course and outcome. This change in attitude which is so important from the therapeutic standpoint, is preëminently the result of the influence of psychoanalysis upon psychiatry and it is with the psychoanalytic treatment of the disorder that this volume deals.

Many of the symptoms of schizophrenia are attempts at a restitution incompatible with reality and any psychotherapeutic effort must so influence the total personality that a resolution of the personality, compatible with reality, may take place. It is true that schizophrenia belongs to the narcissistic disorders, in which the therapeutic resistances are extremely strong, and the usual analytical technique must consequently undergo modification for the treatment of this group. When this technique has reached a certain degree of perfection through a better understanding of these narcissistic disorders, the percentages of recovery, or more normal social adjustments of the schizophrenic, will be materially increased. Therefore, the problem of the psychotherapy of the psychosis will advance hand in hand wth an extension of an understanding of the narcissistic structure of the mental life.

In this volume, Dr. Hinsie deals with these interpretative and dynamic problems. The volume is written with deep understanding and insight of what psychoanalysis is doing today for a comprehension of the dynamic mental process of the schizophrenic patient and discusses in detail the technique of psychoanalytical treatment. The author points out that the purpose of treatment is not primarily to give the psychiatrist an understanding of the patient, but rather to allow the patient an opportunity of seeing and comprehending himself. The various chapters consider the emotions and ideas in schizophrenia, the diagnosis of the incipient disease, the technique of analytical therapy, the part played by psychiatric social service and occupational therapy in the rehabilitation of schizophrenic patients, and finally a survey of the recent literature on schizophrenia and the different methods which have been suggested for its treatment. The volume can be heartily recommended to all workers in the field of psychiatry and mental hygiene and should act as an admirable corrective to those psychiatric organicists who are still vainly seeking for brain lesions in the disease and consequently treating it by drug or surgical therapy. The author concludes the volume, and with his conclusions we agree, that there are still many unsolved problems in schizophrenia, but there are also some palpable therapeutic ideas that should encourage us in the analytical handling of this form of mental disease.

Diseases of the Skin. A Text-book for Practitioners and Students. By GEORGE CLINTON ANDREWS, A.B., M.D., Associate Professor of Dermatology, College of Physicians and Surgeons, Columbia University; Consulting Dermatologist and Syphilologist to Tarrytown Hospital; to St. John's Hospital, Yonkers; to Grasslands Hospital; and to the Broad Street Hospital, New York City. 1091 pages with 988 illustrations. Philadelphia and London: W. B. Saunders Company, 1930. Cloth, $12.00 net.

Dr. Andrews has produced an exceptionally attractive and instructive book on dermatology. The progress in the knowledge and the theory of skin diseases is so slow that any writer must rely upon his arrangement and handling of his subject matter and the clarity of his presentation, rather than upon medical advance, for the features that are to be successful competitively with his rivals in the same field.

Dr. Andrews' book excels in three particulars; namely the grouping of his subject matter, the description of the various mechanical methods of dermatological treatment, and one of the most informative group of photographs that appears in any similar textbook today.

The various dermatoses are grouped as a whole under the presenting or predominating factor in their production. Thus under Dermatoses Due to Physical Causes we find such widely separated conditions as miliaria, xeroderma pigmentosum and roentgen dermatitis. Under Dermatoses Due to Local Chemical Irritants are discussed industrial dermatitis and dermatitis venenata. Eczema and Allied Conditions include eczema, dermatitis seborrhoeica and pityriasis rosea. In this chapter the food allergies are treated in detail and an unusual number of dietary tables and menus is included. A separate chapter is given to Diseases Due to Fungi, and two chapters are devoted to Miscellaneous Pyogenic Infections and Other Diseases Due to Bacilli. The tumor group is divided into Benign Neoplasms and the Malignant Neoplasms of the Skin. Lymphoblastomas, Diseases of the Skin Appendages, of the Mucous Membranes,

of the Cutaneous Blood Vessels and of Pigment, each has a separate section. A chapter each is devoted to the more common diseases of Psoriasis, Lichen Planus, Acne Vulgaris, Fungus Infections and Tuberculosis. One hundred and twenty-eight pages are given to cutaneous syphilis and its treatment, which is discussed at length with numerous tables and laboratory data.

At the end of each chapter there appears an exceptionally full and modern bibliography. This method of grouping the authorities at the end makes it easy to refer to any given condition and the text of the other pages presents a better appearance when unbroken by footnotes.

Over 158 pages are devoted to therapy with x-ray, Supersoft x-rays, Radium, Ultraviolet Light and Diathermy. As might be expected of a New York dermatologist, trained in the MacKee School of x-ray, Dr. Andrews is an enthusiastic user of x-ray in many skin conditions in which the average man would use other forms of therapy. The success which he attains with this modality is a tribute to his own knowledge, and for that same reason can be only partially obtained by the general practitioner or dermatologist. Every possible detail of the use of these various agents is gone into with numerous tables, charts and illustrations.

Dr. Andrews has gathered from many sources all over the country practically a thousand new photographs, each one of which really shows something definite, rather than being historic space fillers. The collection of the syphilitic lesions is exceptionally good, covering every phase of the cutaneous outbreaks of this disease, with exceptional clearness and detail.

More explicit directions in the management of the more common skin diseases and the use of topical applications in them could be well given in some instances. It seems to the reviewer to be a bit unbalanced to devote only 15 lines to the treatment of impetigo contagiosa and 8 pages to the various methods of irradication of superfluous hairs. Impetigo of the new born is covered in 10 lines, yet this is a condition every maternity hospital has to battle with at some time and well merits detailed description of the necessary technique. Throughout the book, barring the recurrent recommendation of x-ray, local treatment is generalized and lacks the individual authoritativeness with which Dr. Andrews speaks of his Roentgen therapy.

Monographs of the Rockefeller Institute for Medical Research No. 23. August 15, 1930. "The Treatment of Human Trypanosomiasis with Tryparsamide. A Critical Review." By LOUISE PEARCE, M.D. Published by the Rockefeller Institute for Medical Research, New York, 1930.

The monograph contains a most valuable collection of information upon the results obtained with tryparsamide in the treatment of African trypanosomiasis in various parts of the country.

The report states (p. 217) that: "The results reported have demonstrated conclusively that tryparsamide induces pronounced beneficial effects in cases of *T. gambiense* infection; the observations in *T. rhodesiense* indicate that the principal benefits to be obtained are in connection with the stimulative action of the drug upon the general body economy."

The one important untoward effect is the occasional occurrence of visual disturbances which have resulted, in a very small proportion of cases, in permanent blindness. This danger, when using tryparsamide, should be minimized by careful regulation of dosage. At any rate the danger is far less than it was with atoxyl, and tryparsamide has proved itself more generally valuable for the treatment of African sleeping sickness than has any other known drug.

The Rockefeller Foundation, Dr. Pearce, and the other investigators who have helped to determine the true value of tryparsamide are all to be congratulated upon the results obtained.

BOOKS RECEIVED FOR REVIEW

Histology for Medical Students by H. Hartridge and F. Haynes. Published by Humphrey Milford, Oxford University Press. 369 Pages.

Elementary Zoology for Medical Students by L. A. Borradaile. Published by Humphrey Milford, Oxford University Press. 397 Pages.

An Introduction to Malariology by Mark F. Boyd. Published by Harvard University Press. 437 Pages. Price $5.00.

A Brief History of Medicine in Massachusetts by Henry R. Viets. Published by Houghton Mifflin Company. 194 Pages. Price $4.00.

Laboratory Medicine—A Guide for Students and Practitioners by Daniel Nicholson. Published by Lea & Febiger. 433 Pages. Price $6.00.

A Text-Book of Pathology. Edited by E. T. Bell. Published by Lea & Febiger. 627 Pages. Price $8.00.

Selected Readings in the History of Physiology. Edited by John Farquhar Fulton. Published by Charles C. Thomas, Publisher. 317 Pages. Price $5.00.

The Treatment of Schizophrenia by Leland E. Hinsie. Published by The Williams and Wilkins Company. 206 Pages. Price $3.00.

Diseases of the Ear by Philip D. Kerrison. Fourth Edition. Published by J. B. Lippincott Company. 627 Pages. Price $7.50.

Clio Medica edited by E. B. Krumbhaar. IV—Internal Medicine by Sir Humphry Rolleston. 92 Pages. Price $1.50.

Le Traitement de la Syphilis by A. Sézary. Published by Masson et Cie, Éditeurs. 198 Pages. Price 16 fr.

Travaux Pratiques de Physique Médicale by S. Turchini. Published by Masson et Cie, Éditeurs. 116 Pages. Price 14 fr.

La Pression Veineuse Périphérique by Maurice Villaret, Fr. Saint-Girons and L. Justin-Besancon. Published by Masson et Cie, Éditeurs. 318 Pages. Price 38 fr.

Medical and Surgical Reports of the Episcopal Hospital. Volume VI. Published by Press of William J. Dornan. 460 Pages.